

City of New Haven Long Term CSO Control Plan



The City of New Haven



New Haven Water Pollution Control Authority

Technical Memorandum #7 Nine Minimum Controls Report



CH2MHILL

June, 1998



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135807.BA.05

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Dear Sirs:

Subject: New Haven LTC Project
Task 5 - Nine Minimum Controls

Attached please find three copies of the final draft of Technical Memorandum # 7. This memorandum has been revised per the comments we received on the March 1998 draft. Technical Memorandum #7 presents information collected to date related to the following six minimum controls:

- Operation and maintenance
- Pretreatment program
- Prohibition of dry weather overflows
- Solids and floatables control
- Pollution prevention
- Public notification

This memorandum also presents issues for consideration to enhance existing programs and procedures. These issues will also be reviewed throughout the course of this project for possible inclusion into the Long-Term CSO Control Plan as they apply to compliance with specific elements of New Haven's NPDES permit and EPA's nine minimum control guidelines. After model development (Task 2) and hydraulic characterization (Task 4), a second Task 5 technical memorandum (#8) will be prepared presenting information collected and analyzed using the sewer system computer model related to the remaining three minimum controls.

Please do not hesitate to contact us should you have any questions or comments, or if you would like to meet to discuss our findings.

Sincerely,

CH2M HILL

A handwritten signature in black ink that reads "Rita Fordiani, P.E." in a cursive script.

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CITY OF NEW HAVEN LONG-TERM CSO CONTROL PLAN

TECHNICAL MEMORANDUM #7

Nine Minimum Controls Report

Prepared for

The City of New Haven
The New Haven Water Pollution Control Authority

Prepared by

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June 1998

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Introduction

Project Background

The City of New Haven and the New Haven Water Pollution Control Authority (WPCA) operate a wastewater collection and treatment system which serves over 100,000 residents in the City of New Haven, and through interlocal agreements, the Towns of Woodbridge, Hamden, and East Haven (East Haven accepts some wastewater flow from North Branford). The wastewater collection system includes both combined (one sewer collecting both sanitary sewage and stormwater runoff) and separate sewers (two sewers: one sewer to collect sanitary sewage and a second sewer to collect stormwater runoff).

During dry weather, New Haven's sewer systems transport a combination of sanitary flow and groundwater infiltration to the 40-mgd East Shore Water Pollution Abatement Facility (WPAF). All dry weather flows receive secondary treatment and disinfection at the WPAF prior to discharge to New Haven Harbor.

During wet weather, large quantities of stormwater enter the combined sewer system. As a result, portions of the system may become overloaded, and combined sewage overflows to receiving waters. There are approximately 257.5 miles of sanitary/combined sewers, 25 combined sewer overflow (CSO) regulators which divert high flows from the interceptor sewer to a CSO outfall, and 21 CSO outfalls.

A facility plan, which evaluated alternative methods for controlling CSOs, was completed in 1981 and updated in 1988. The plan evaluated controls required to convey, treat, or store overflows associated with a 10-year storm. The plan concluded that sewer separation was the most cost-effective method of meeting the evaluation criteria. Approximately 35 percent of the planned sewer separation is complete (CH2M HILL, July 1997). Because of the significant advancements in regulatory requirements and technological issues, the city has decided to reevaluate this approach.

Project Objectives

In 1997, the City of New Haven entered into an agreement with CH2M HILL to prepare a Long-Term CSO Control Plan. The objectives of this project include the following:

- Reduce the overall cost of constructing CSO controls
- Produce documents required for CSO-related issues described in the WPCA's National Pollutant Discharge Elimination System (NPDES) Permit administered and enforced through the State of Connecticut Department of Environmental Protection's (CTDEP) Permitting, Enforcement, and Remediation Division, Water Management Bureau (CTDEP, 1994).
- Produce a Long-Term CSO Control Plan which, in general, is consistent with guidance provided in the USEPA's CSO Control Policy of April 1994

Tasks of the project include the following:

- Task 1: Establish Project Goals and Approach
- Task 2: Model Development
- Task 3: Monitoring Program
- Task 4: Hydraulic Characterization
- Task 5: Nine Minimum Controls
- Task 6: Evaluation of CSO Control Alternatives
- Task 7: Design Development
- Task 8: Long-Term CSO Control Plan

Purpose of this Report

The specific objective of Task 5 is to provide documentation as required by the WPCA's existing NPDES permit and the EPA's CSO Control Policy related to EPA's Nine Minimum Controls (NMCs). EPA's CSO Control Policy provided guidance to decision-makers for complying with the Clean Water Act. EPA determined the following list of NMCs would aid in reducing the impacts of CSOs on receiving waters (EPA, 1995):

1. Proper operation and regular maintenance programs for the sewer system and CSO outfalls
2. Maximum use of the collection system for storage
3. Review and modification of pretreatment requirements to ensure that CSO impacts are minimized
4. Maximization of flow to the POTW for treatment
5. Elimination of CSOs during dry weather
6. Control of solid and floatable materials in CSOs
7. Pollution prevention programs to reduce contaminants in CSOs
8. Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts
9. Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls

Many of the NPDES requirements are similar to the NMCs; for ease of presentation the following lists NPDES requirements related to CSOs (in order as they appear in Sections 5 through 14 of the permit) and the associated EPA NMC:

- Maintain an updated list of the locations of outfalls and regulators and submit changes to the list as soon as they are known to the Commissioner of the CTDEP (NMC #1)
- Prevent dry weather overflows (DWOs); report DWOs in accordance with the permit requirements (NMC #5)
- Prevent septage, holding tank waste, oils, solids, and floatables from being discharged to receiving waters via CSOs (NMC - all)
- Prevent CSOs from causing violations to State Water Quality Standards (NMC - all)

- Identify an O&M manager responsible for the collection system and to be the point of contact for the CTDEP (NMC #1)
- Inspect and maintain the collection system to prevent solids deposition or obstructions which could lead to wet or dry weather overflows (NMC #1)
- Inspect and maintain all CSO structures/regulators, pumping stations, and tide gates to minimize CSO discharges and tidal inflows (NMC #1)
- Submit a report to the CTDEP which describes and evaluates alternatives to control solids and floatables (NMC #6)
- Develop and implement a high flow management plan to maximize use of the collection system for storage (NMC #4)
- Reduce excessive infiltration/inflow to the sewer system (NMC #7)
- Install and maintain identification signs for all combined sewer outfall structures (NMC #8)
- Develop and maintain a warning system for notification of downstream or adjacent water dependent users (NMC #8)
- Revise the Sewer Use Ordinance to incorporate the language identified in the NPDES permit and submit it to the CTDEP (NMC #7)
- Submit a CSO monitoring plan to ensure compliance with the NPDES permit to the Commissioner of the CTDEP (NMC #9)
- Provide alternate power sources for full operation at all pump stations (NMC #1)
- Comply with operator certification regulations (NMC #1)
- Authorize a new discharge from a single source to the WPAF of industrial wastewaters or cooling waters only after the discharger first obtains a permit from the Commissioner of the CTDEP (NMC #3)
- Maintain a system of user charges sufficient for O&M and parts replacement for the treatment plant and collection system (NMC #1)
- Develop a plan to accommodate future increases in flow to the treatment plant (NMC #2)
- Discharge so as not to violate the Interstate Sanitation Commission Water Quality Regulations (NMC - all)

Several of the NPDES requirements and NMCs cannot be adequately documented and evaluated until the hydraulic model and characterization tasks are completed. Figure 1 displays the CSO controls that are discussed in this report and those that will be addressed at a later date after modeling is completed. The purpose of this report is to document the information that can be assessed prior to model completion and hydraulic characterization (i.e., documentation for controls 1, 3, 5, 6, 7, and 8). Other controls will be addressed in a second Task 5 technical memorandum (#8) subsequent to completion of the other project components.

In this report, issues will be identified that may ultimately become part of the New Haven Long-Term CSO Control Plan; however, a complete evaluation and action plan with recommendations, including prioritization, schedule, and budget, cannot fully be developed until Tasks 5 and 6 have been completed.

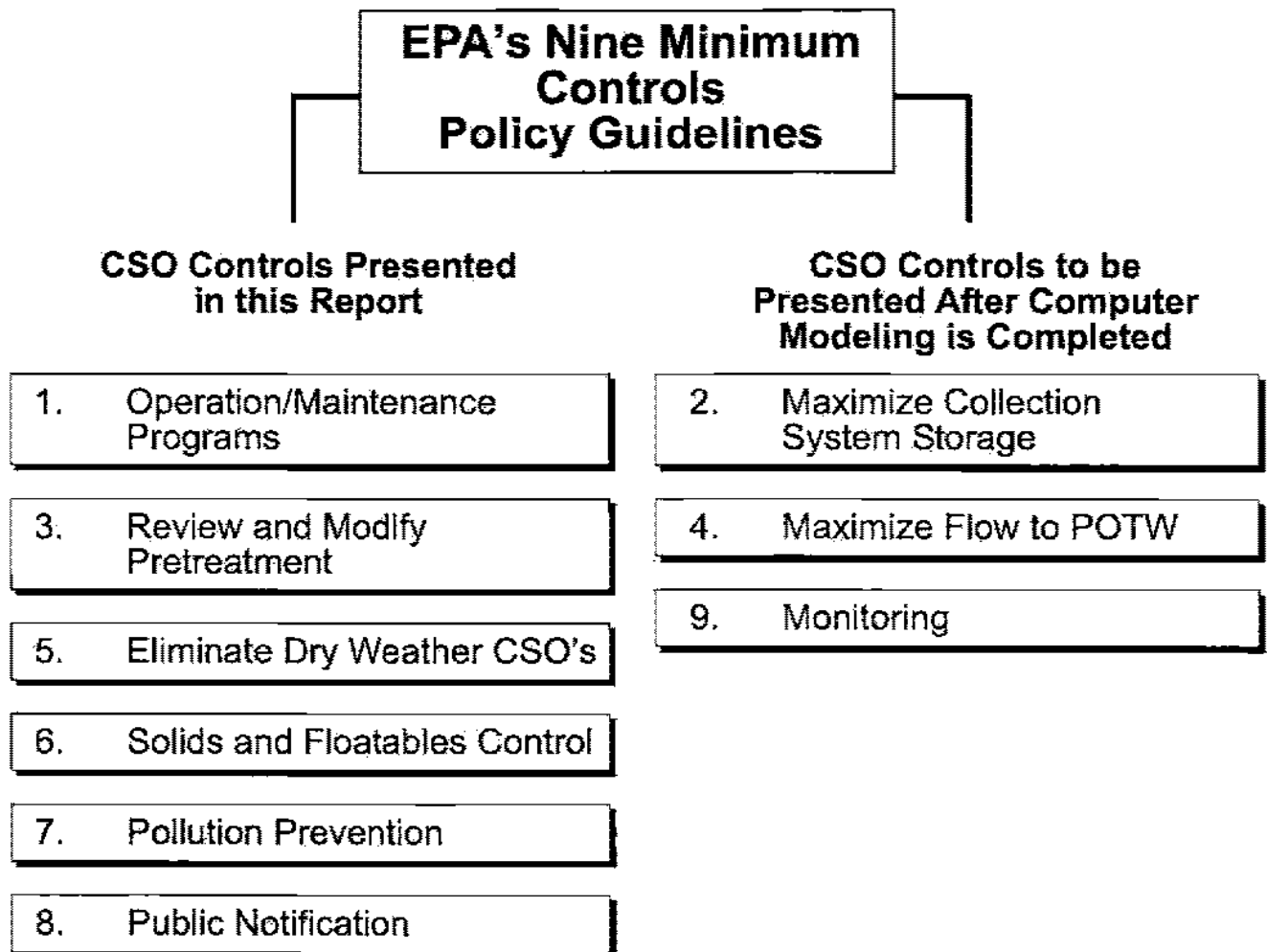


Figure 1
Nine Minimum Controls
Presented in this Report

Operation and Maintenance

Introduction

This section provides documentation on operation and maintenance of the combined sewer system per guidelines provided in EPA's CSO Control Policy. The goal of this control is to ensure proper operation and maintenance of the sewer system and related facilities and compliance with NPDES-related requirements to reduce the frequency, magnitude, and duration of CSOs.

Specific related requirements in the NPDES permit include the following:

- Maintain an updated list of the locations of outfalls and regulators and submit changes to the list as soon as they are known to the Commissioner of the CTDEP
- Identify an O&M manager responsible for the collection system and to be the point of contact for the CTDEP
- Inspect and maintain the collection system to prevent solids deposition or obstructions which could lead to wet or dry weather overflows
- Inspect and maintain all CSO structures/regulators, pumping stations, and tide gates to minimize discharges and tidal inflows
- Provide alternate power sources for full operation at pump stations
- Comply with operator certification regulations
- Maintain a system of user charges sufficient for O&M and parts replacement for the treatment plant and collection system

The overall O&M program encompasses many facilities and varying procedures. Therefore, in this section the O&M program is organized with respect to the following critical facilities:

- Collection system, including the James Street siphon
- Overflow structures
- Tide gates
- Pump stations
- Treatment facilities

Pertinent items for each of the critical facilities such as personnel, training, equipment, inspection and maintenance activities, cleaning and repair schedules, problem correction procedures, documentation are examined in this section. The overall budget for O&M associated with the above facilities is approximately \$15 million annually.

O & M Resources

Responsibility for O&M of the City's sewer system is as follows:

- Sanitary Sewers – WPCA
- Combined Sewers – WPCA
- Storm Sewers – City Engineer/Public Works

Accordingly, this is handled by a variety of staff assigned to a number of organizations including the WPCA, City of New Haven Engineering Department, and the City of New Haven Department of Public Works. An organizational chart identifying staff with O&M responsibilities is shown as Figure 2.

The WPCA and the City of New Haven share responsibility of the collection system. The WPCA is responsible for the operation and maintenance of the sanitary and combined sewer collection system including the wastewater pump stations and treatment plant, and the City of New Haven is responsible for the storm sewer collection system. The focus of the operation and maintenance component of the NMCs and related-NPDES requirements is on the sanitary/combined sewer collection system and not on the storm sewer collection system; therefore, the following documentation principally reflects the activities by WPCA staff. Activities by City staff will be identified in the specific sections as they apply.

Within the WPCA, the Wastewater System Superintendent has overall responsibility for operation and maintenance activities. In compliance with the WPCA's NPDES Permit, the Superintendent is the designated O&M Manager.

The current inspection and maintenance program for the collection system is managed by the WPCA Collection System Superintendent. The Collection System Superintendent is responsible for a maintenance crew consisting of 10 full time staff and a foreman and for the WPCA Pollution Abatement Technician and his crew of 3 full time and 2 part time staff. At the time of this report, the maintenance crew was understaffed and had a 7-man crew and a foreman. The maintenance crew's primary responsibilities are to operate and repair the sanitary and combined sewer collection system including force mains- and regulators, and to provide routine catch basin cleaning and maintenance services to the City.

The WPCA Pollution Abatement Technician is in charge of the industrial pretreatment program. The industrial pretreatment program employs three full time and 2 part time inspectors under the supervision the WPCA Pollution Abatement Technician. The inspection crew investigates commercial, industrial and food processing facilities for compliance with the pretreatment program, inspects the regulators and outfalls on a monthly basis, and enforces the sewer use ordinance.

The WPCA Maintenance Director is responsible for pump station operation and maintenance programs, as well as maintenance programs for the WPAF. The Maintenance Director is responsible for a pump station O&M crew consisting of 4 full-time staff and a supervisor, and a treatment plant maintenance staff of 5 full-time mechanics and a head mechanic.

The WPCA Process Control Superintendent is responsible for operations, process control, and the laboratory for the WPAF. The Process Control Superintendent is responsible for a treatment plant operations crew consisting of 11 plant operators and 4 supervisors, although 2 of the 15 people are scheduled to retire in June.

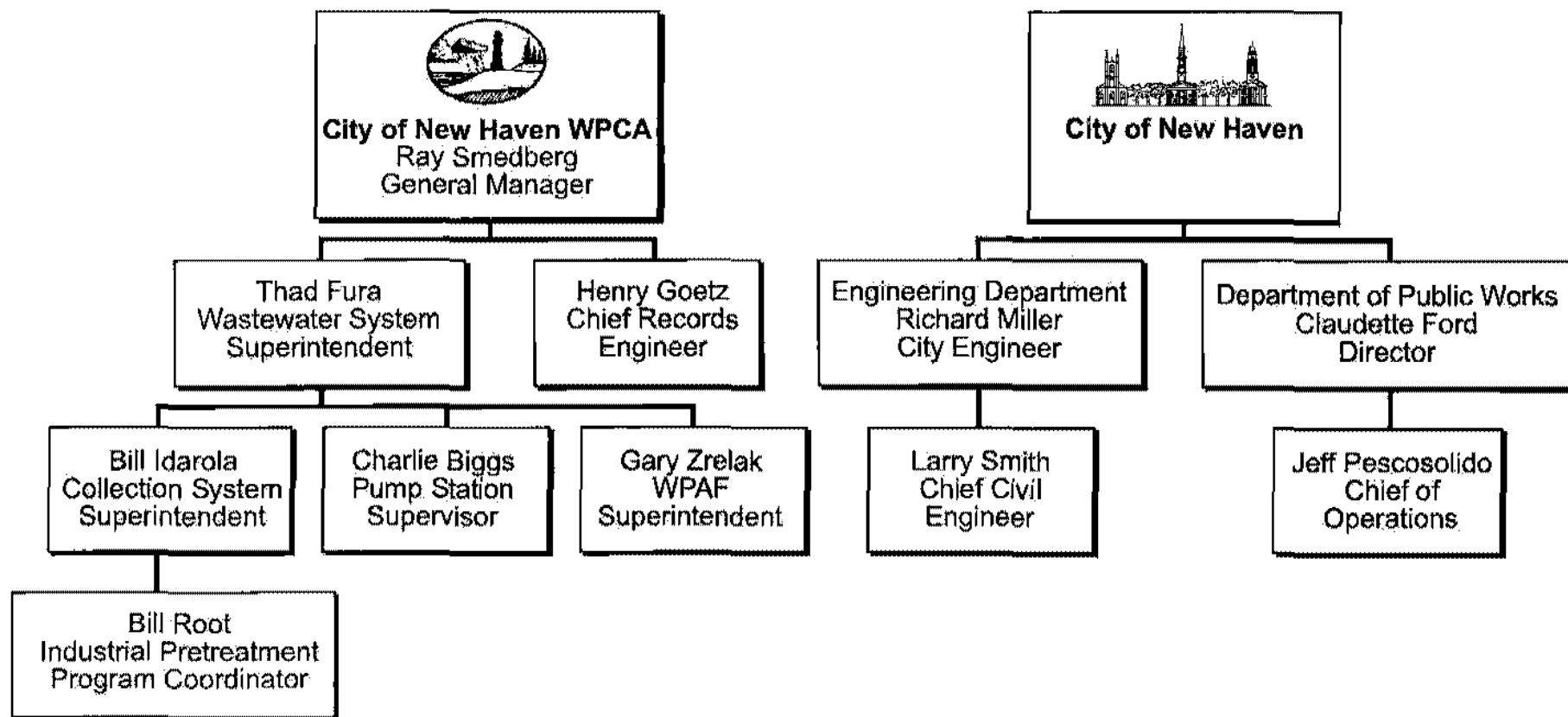


Figure 2
Sewer System
Operation and Maintenance
Organization Chart

Training

The Wastewater System Superintendent has a Connecticut (CT) Class IV Wastewater Operator's Certification and is responsible for communicating with CTDEP. The WPAF Process Control Superintendent also has a CT Class IV Wastewater Operator's license. The Collection System Superintendent was certified through the New England Water Environment Association's Voluntary Certification Program. The foreman has a Collection System Operator License Class III. O&M general maintenance staff receive safety training that addresses emergency response, confined-space entry, and road and traffic safety. Records of this program are maintained and each employee receives a yearly refresher course. On-the-job training is also completed as needed for new staff and procedures. In addition to the formalized safety training, manufacturer training is provided with the purchase and installation of all major equipment. This training, which is typically a contractual requirement, is provided to staff to ensure that all equipment is operated in a safe and effective manner. O&M manuals are also provided for new equipment. All facility and equipment O&M manuals are kept for reference.

Collection System

Currently the City of New Haven conveys and treats wastewater through interlocal agreements with the Towns of Woodbridge, Hamden, and East Haven. These interlocal agreements have limits for allowable average daily and maximum daily flows, along with requirements for the control of infiltration and inflow and wastewater quality and requirements for the interlocal towns to have acceptable sewer ordinances in place. The agreements give the WPCA the authority to monitor and enforce these requirements. However, the agreements are considered to be problematic in that New Haven has no direct control over these tributary portions of the system, is generally uninformed of potential problems associated with inadequate O&M of these areas, and is subject to the flows and loads that discharge to the New Haven system without sufficient coordination to adequately address the impacts associated with the flow from these areas. In some cases a DEP discharge permit is sought that requires the signature of the receiving wastewater authority, otherwise the WPCA is generally not informed of new discharges. Presently, flows from areas outside of the city boundaries are monitored at 14 locations.

Inventory of Critical Facilities

The collection system includes approximately 257.5 miles of separate sanitary and combined sewers, ranging from 2-inch to 78-inch in diameter. During the past several years, the city has separated approximately 1/3 of its combined sewers. Under the separation program, the city has installed new storm systems to collect stormwater from streets and left the existing combined sewers to collect principally sanitary flows. However, residential and commercial roof leaders are still connected to the combined sewers in the separated areas. This roof leader flow is of concern because it represents storm flow that is treated by the wastewater treatment plant; yet without this flow component, velocity in the sewers may be too low to adequately flush the system. These issues will be discussed after modeling results are complete and the impacts of these flows can be better understood.

A GIS database of the entire New Haven sewer system is currently under development as part of this project and will be completed during the spring of 1998. The database will include all critical facilities in the combined, sanitary, and storm sewer systems including gravity sewers,

force mains, pump stations, manholes, regulators, and outfalls with details such as location, invert elevation, pipe size and shape, pipe materials, year of construction, and source of information. The database is still under development and field work and quality control checks are still being performed. The database represents the current understanding of the sewer system and as is subject to change as the project progresses and as system changes are made.

The following figures display system characteristics that are helpful in understanding the potential for problems, as well as priorities for addressing system concerns. Figures 3 and 4 show the lengths of pipe by pipe age for both the sanitary/combined sewer system and the separate storm system, respectively. A calculation of length of pipe by age indicates that approximately 66 percent of the sanitary sewers are more than 50 years old (i.e., constructed prior to 1945 with 3 percent of unknown age) and 66 percent of the storm sewers are less than 50 years old (i.e., constructed since 1945 with 13 percent unknown age).

Figures 5 and 6 show the lengths of pipe by pipe material for both the sanitary/combined sewer system and the separate storm system, respectively. The figures indicate that the most prevalent material in the sanitary system is tile. In contrast, the most prevalent material in the storm system is reinforced concrete pipe (RCP). Some materials were not noted on plans, and material assumptions have been made based on year of construction and known pipe materials used in the area.

Figures 7 and 8 show the lengths of pipe by pipe diameter for both the sanitary/combined sewer system and the separate storm system, respectively. This type of information is useful in evaluating the system and determining the most effective operations and maintenance procedures. For instance, should pipe breaks be more associated with a particular pipe type or pipe age, then inspection and rehabilitation procedures may be geared toward high risk areas where these types of pipe are prevalent.

There is a siphon in operation, the James Street siphon crossing the Quinnipiac River, that consists of three ductile iron barrels (18-inch, 20-inch, and 24-inch). Flow is directed to the siphon through an upstream regulator chamber. If, for any reason the siphon is unable to accept flow, such as capacity exceedance or the mechanical failure of a component, the regulator chamber will overflow and discharge into the Quinnipiac River (NPDES Discharge #015). Because of its location, the siphon also functions as an overflow structure for the WPAF if a failure occurs. The James Street siphon has two mechanical bar screens that operate on a differential self-cleaning cycle. The two bar racks, which will remove objects greater than 2-inches in diameter, are automatically actuated via a bubbler/mercold system that measures the downstream and upstream channel head. The racks remove an average of 1.88 tons of debris per month. The siphon is cleaned once a year by means of high pressure water. The siphon outlet structure discharges flow to a 54-inch sewer.

O&M Resources

The current inspection and maintenance program for the sanitary and combined sewer collection system and catch basin cleaning program is managed by the Collection System Superintendent. He is responsible for a maintenance crew consisting of 10 full time staff and a foreman. At the time of this report, they were understaffed and had a 7-man maintenance crew and a foreman. The maintenance crew's primary responsibilities are to operate and maintain the sanitary and combined sewer collection system including force mains and regulators, and to provide catch basin cleaning services to the City.

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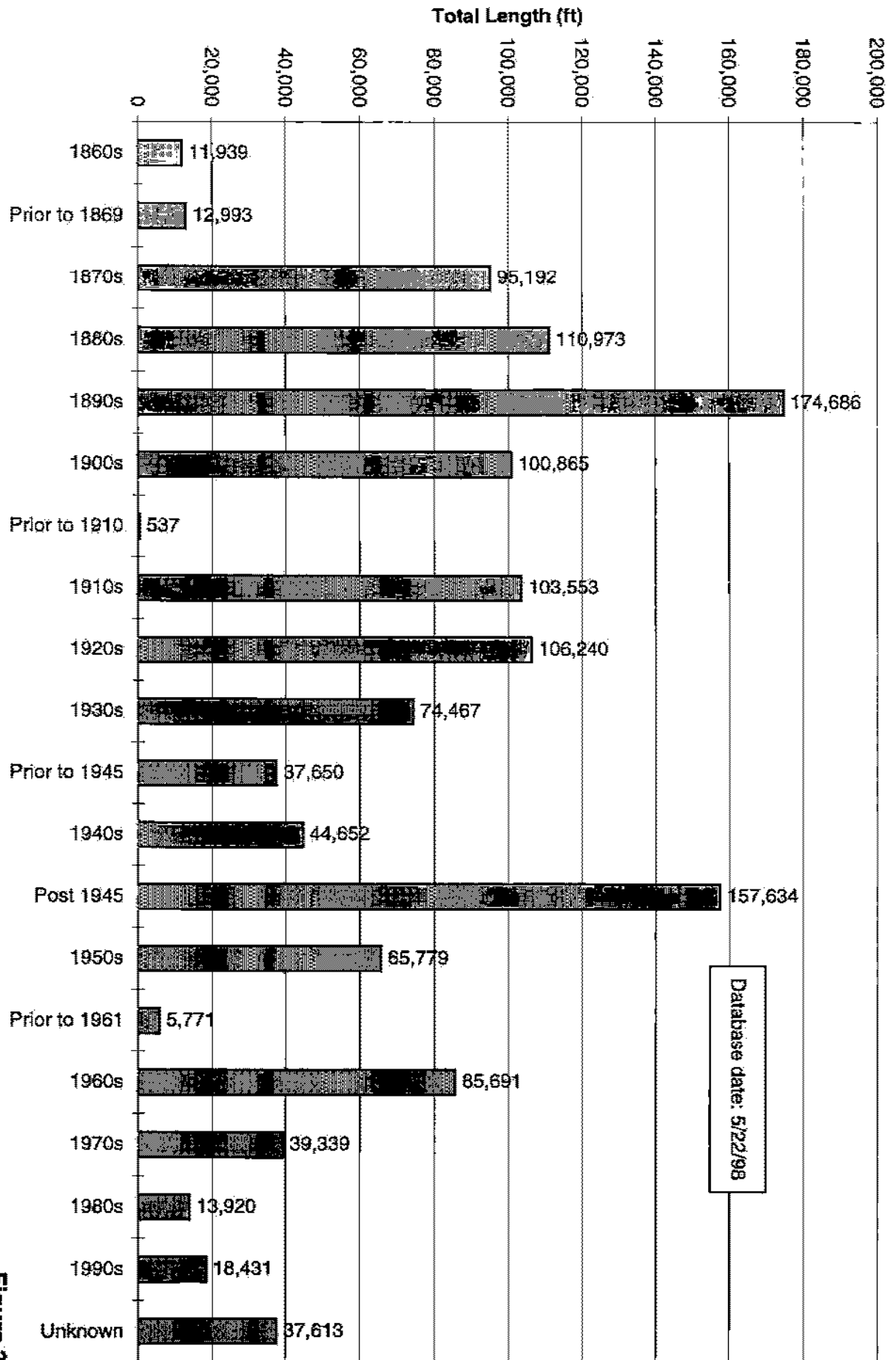


Figure 3
New Haven CSO LTCP
Sanitary/Combined Sewers
Pipe Length vs. Pipe Age

Total Length (ft)

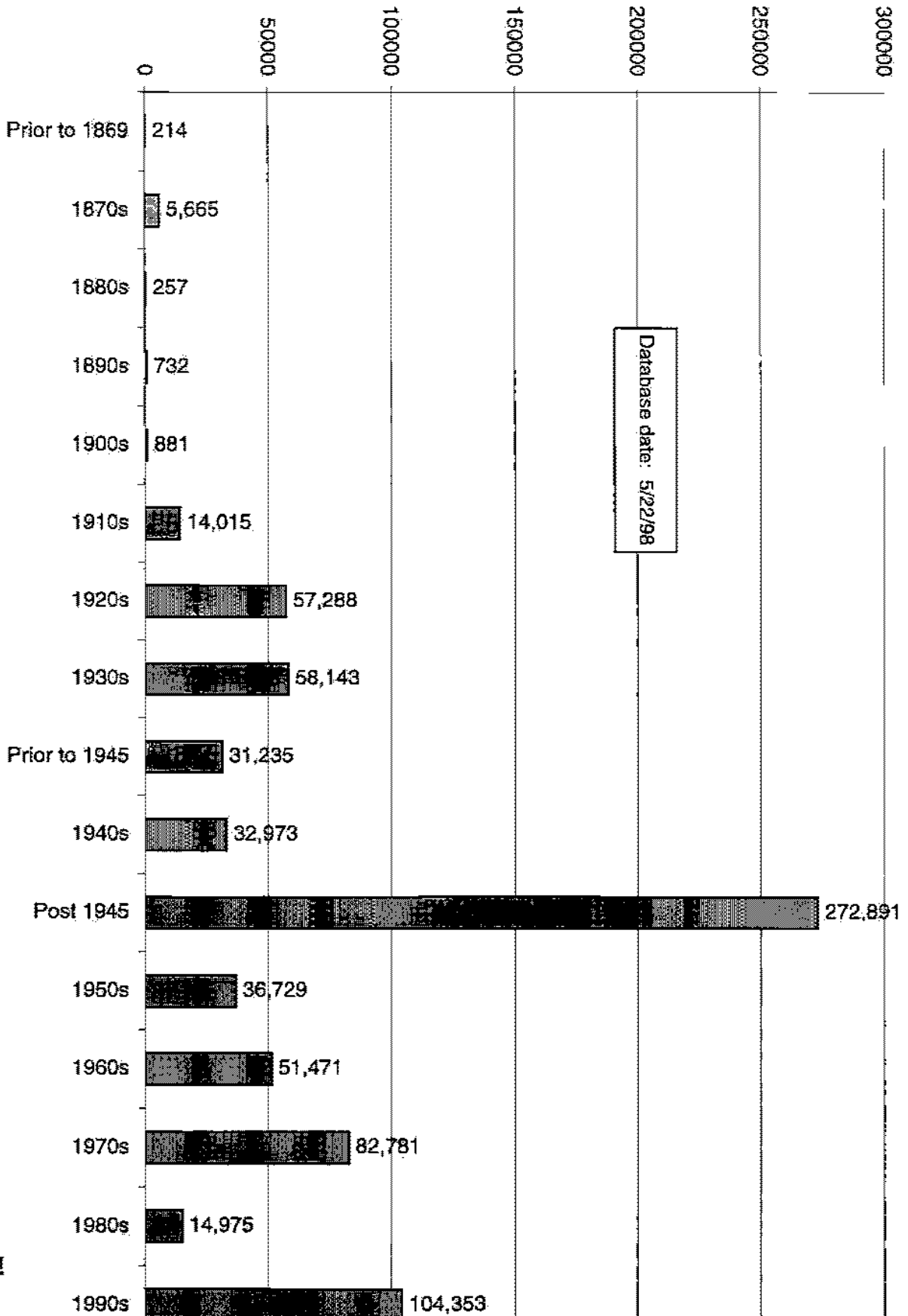


Figure 4

New Haven CSO LTCP
Storm Sewers
Pipe Length vs Pipe Age

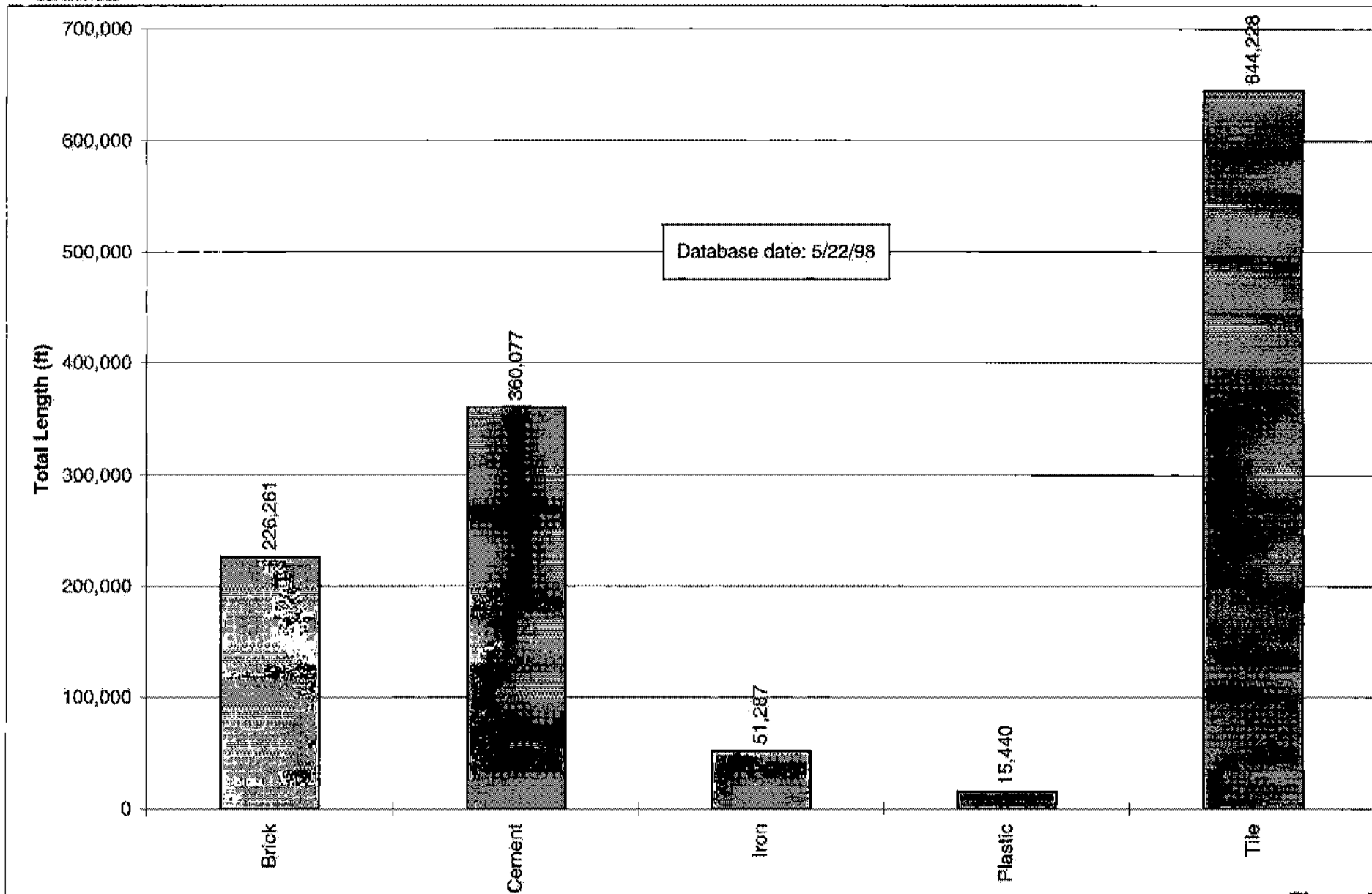


Figure 5
New Haven CSO LTCP
Sanitary/Combined Sewers
Pipe Length vs. Pipe Material

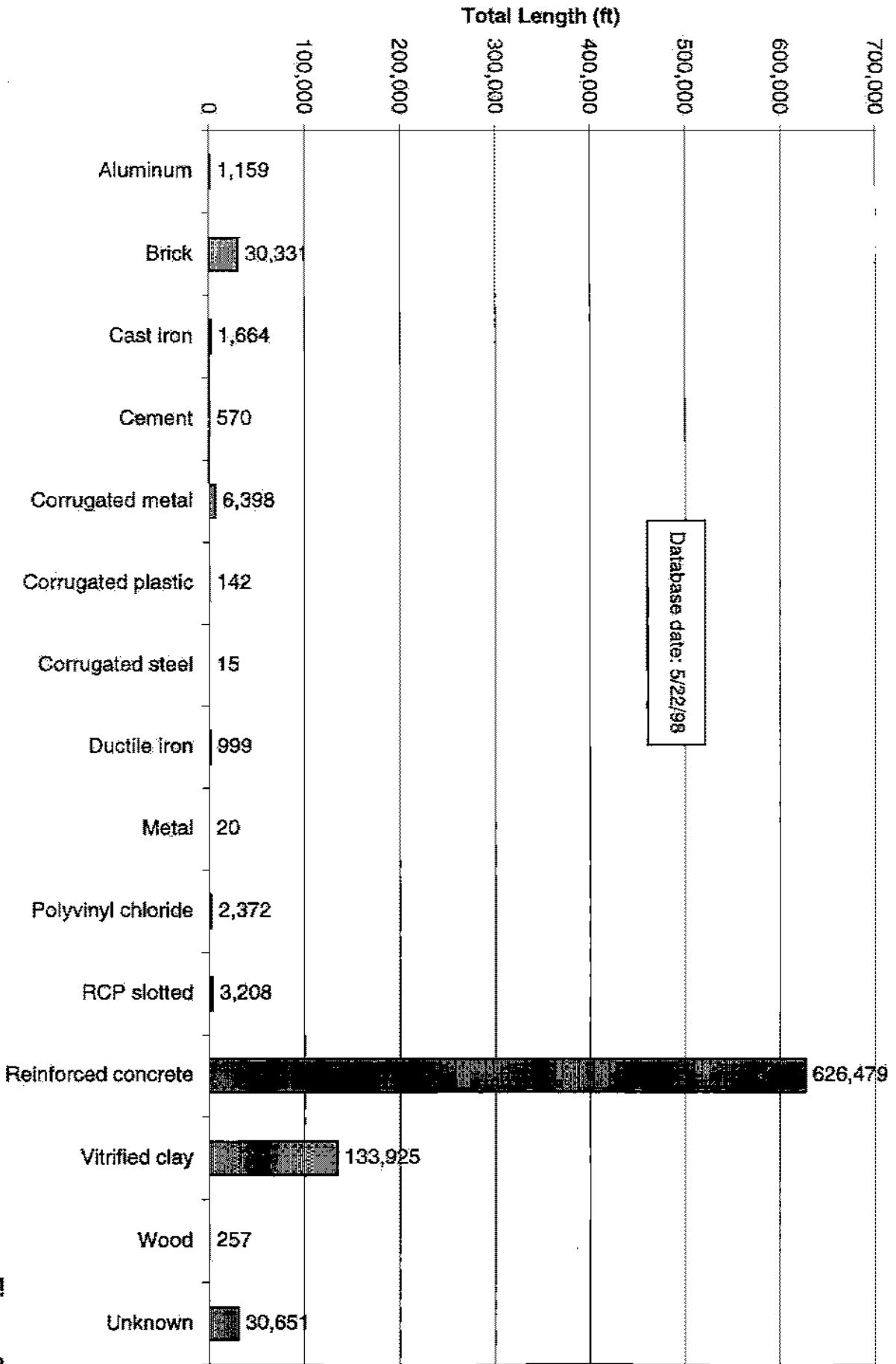
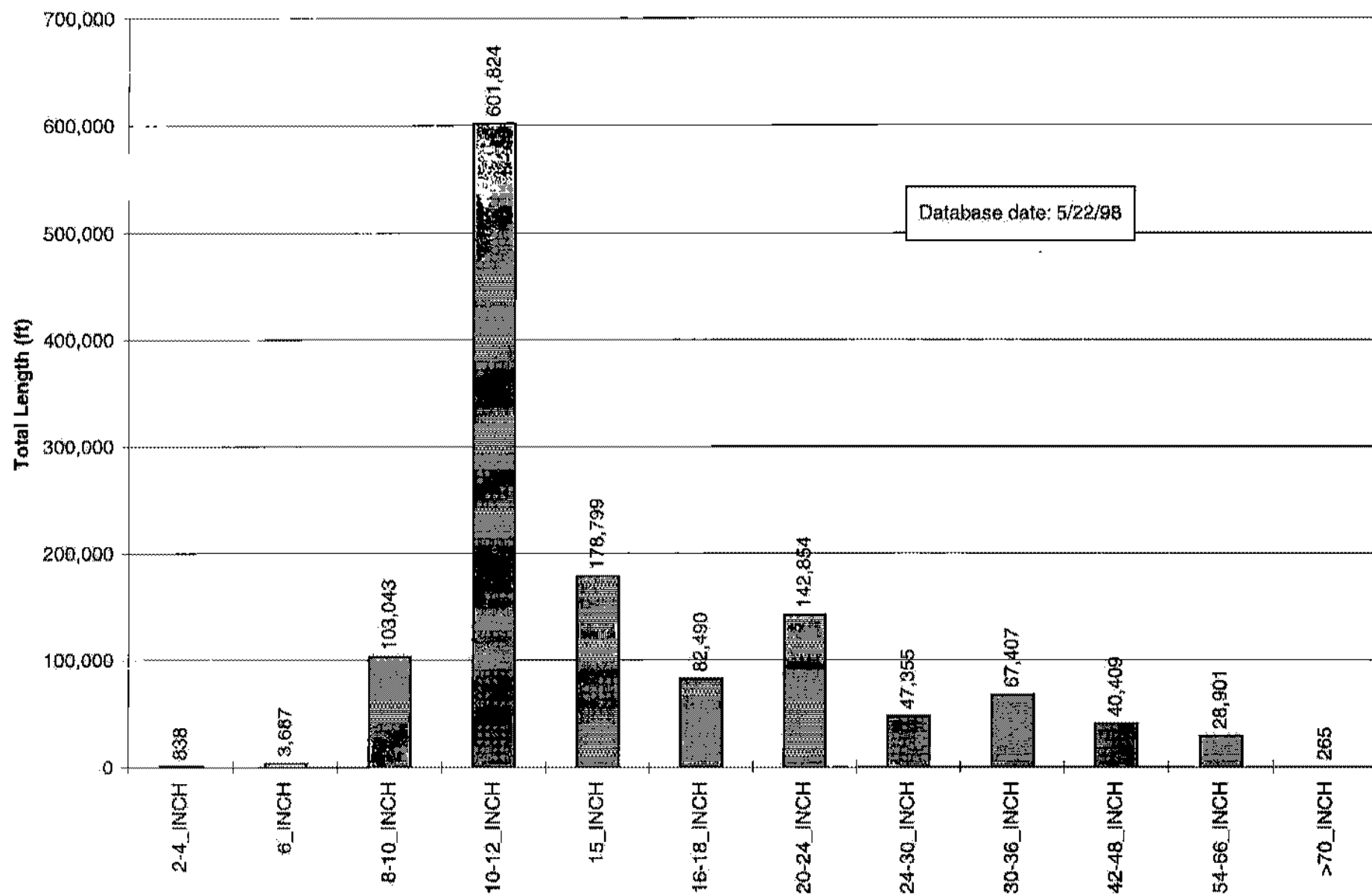


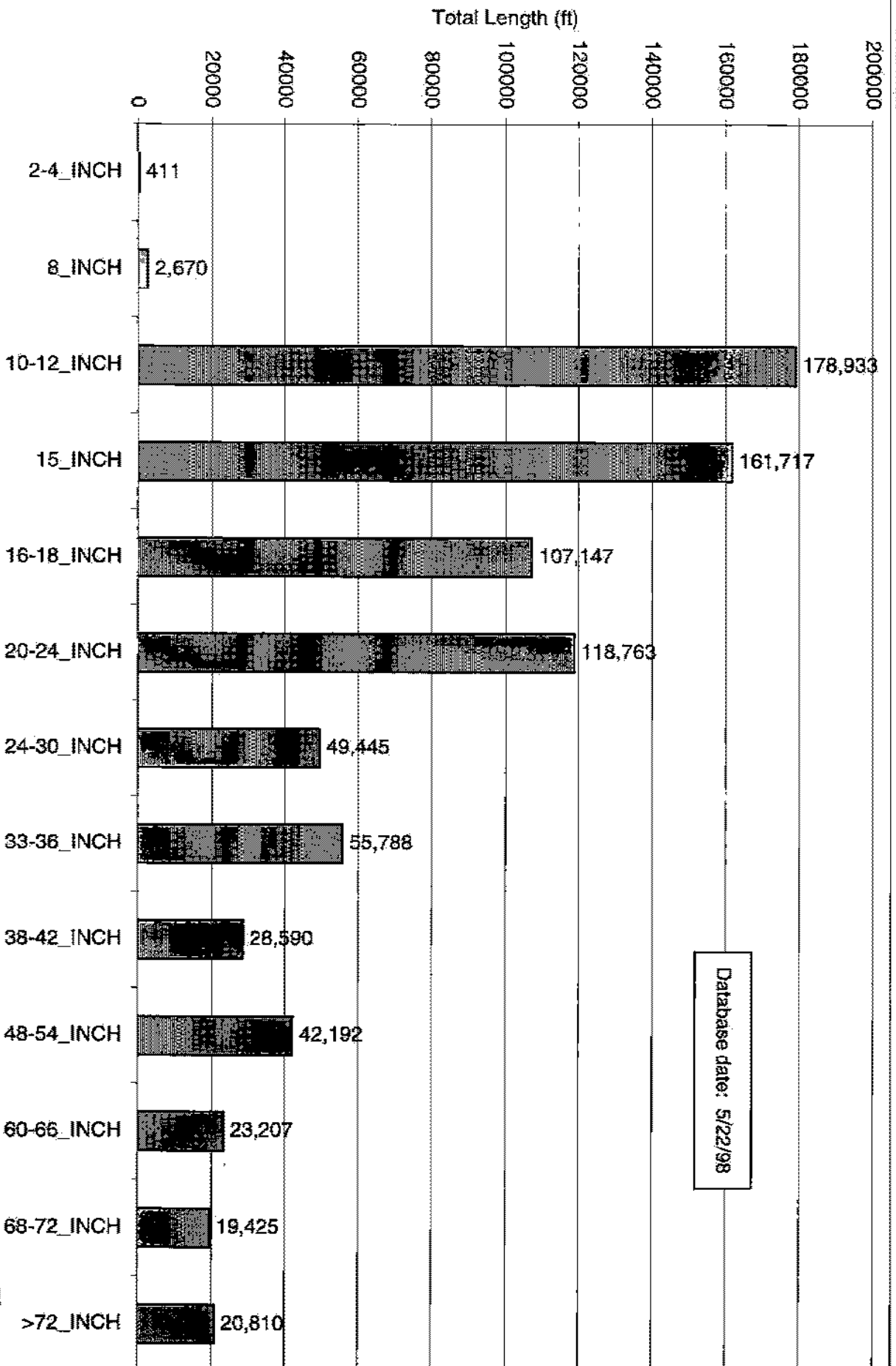
Figure 6

New Haven CSO LTCP

Storm Sewers

Pipe Length vs. Pipe Material





Database date: 5/22/98

Figure 8

New Haven CSO LTCP

Storm Sewers

Pipe Length vs. Pipe Diameter

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The equipment being used by the maintenance crew consists of:

- 2 Stetco clam trucks
- 1 combination jet vacuum/ rooter truck
- 1 square box flusher/rooter truck
- 1 vacuum truck
- 1 pick-up truck
- 1 van for the supervisor to track complaints

The annual budget for O&M of the sanitary and combined collection systems, including small pump stations and catch basin cleaning, totals approximately \$1.2 million. Additional O&M budgets for the Boulevard and East Street Pump Stations total \$0.5 million and \$0.3 million, respectively.

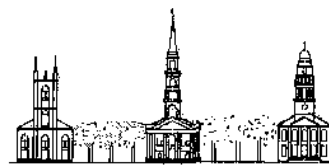
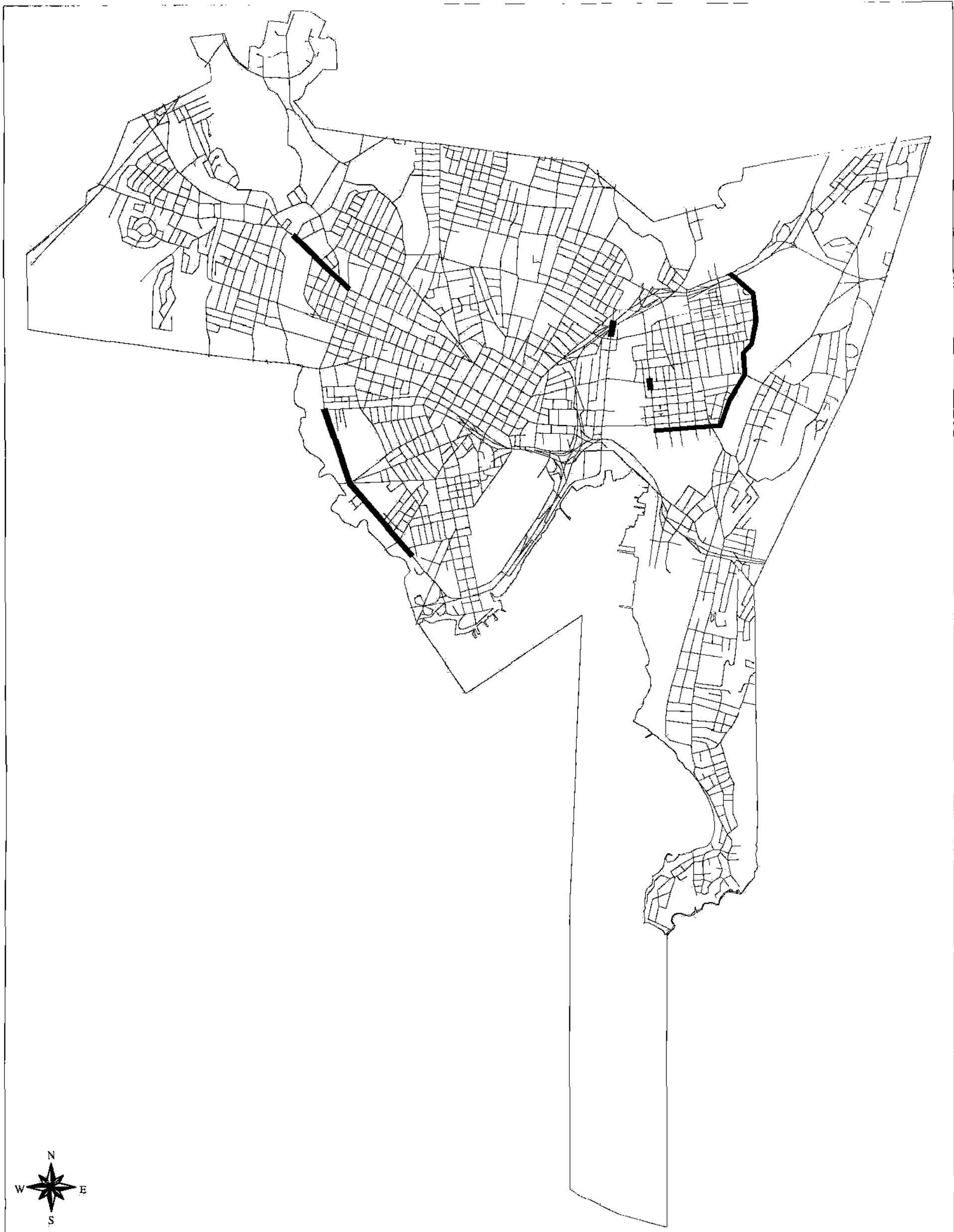
O&M Procedures and Schedules

There are several programs in place that track and address maintenance issues in the combined and sanitary collection system: root removal, sediment flushing, grease build-up, and cave-in procedures. In 1994 and 1995, the WPCA used chemicals to treat 19,100 and 19,680 lineal feet, respectively, of sewers with severe root intrusion problems. In 1997 a second treatment was undertaken for 18,500 linear feet of sewers that had undergone previous treatment. 9,130 linear feet of the twice-treated pipes are under contract to be inspected and videotaped and to have roots completely removed during the summer of 1998.

Flushing of the collection system is presently scheduled to alternate areas around the City, with a goal of cleaning all of the critical sewers every 3 to 5 years; problem areas are noted and flushed more often. Certain trouble spots are not economical to clean because they are hydraulically prone to sedimentation. These types of areas are under investigation for improvements that will alleviate the silting problem. This program is new and evolving; currently it is behind schedule and work is being done to streamline the procedures to meet the 5-year maintenance goal. The WPCA maintains a collection system map with color coded piping denoting which areas have been cleaned and where other preventive maintenance has been performed, areas considered to be trouble spots requiring bi-monthly maintenance, and areas of localized sewer backup/flooding complaints throughout the system. This map is used to prioritize the work to be completed and record and document the program progress.

The cleaning is performed by WPCA crews as well as outside contractors using a high pressure water method. According to the WPCA, the program has fallen behind schedule due to present staff limitations. WPCA contacts have noted that the impacts of the flushing have been minimal. However, it was discovered during flow monitoring of the system, and verified by maintenance staff, that there appears to be a significant problem with silt in the collection system. This build-up of silt decreases system carrying capacity and impacts the calibration of the hydraulic model associated with the Long-Term CSO Control Project. As part of this project, a GIS coverage is being developed by CH2M HILL indicating areas with significant sedimentation deposition. Although not yet complete, Figure 9 presents the information collected to date.

Areas of the collection system which experience frequent blockages, primarily due to grease buildup, are inspected every two months. This information is coordinated in conjunction with the pretreatment program discussed later. A file is maintained containing records of such blockages. Before any repairs take place, a TV investigation by a private contractor hired by the WPCA determines the extent of the needed repair and if there is a responsible party.



-  Area of Sediment
-  Streets
-  City Boundaries

Figure 9
Areas of Known
Sedimentation

The O&M Manager then decides how to proceed with repairs. Computer files document the repair and maintenance procedures needed and completed on the sewer system.

The WPCA also maintains a map that notes the location of sewer cave-ins. This map helps identify deteriorating areas of the system that require attention, and can be used for prioritizing future rehabilitation. All pipe breaks are recorded on a spreadsheet and the map, with notations identifying the nature of the work and costs.

The flow monitoring program, being undertaken as part of the LTCP, indicated probable blockages in the following two separate sanitary sewer areas:

- Lowin Avenue south of Fountain Street, 12-inch diameter sewer. This sewer is scheduled for chemical treatment during the fall of 1998 and may be a candidate for future pipe relining.
- Chapel Street east of Alden Avenue, 12-inch diameter sewer. WPCA field crews inspected the pipe in this area and concluded it was a temporary blockage.

The WPCA indicates that silt is a chronic problem in the following areas:

- James Street: The sewer is subject to backwater caused by the James Street siphon. Between River Street and Chapel Street there is approximately 12 inches of sediment.
- River Street: The flow velocity approaches zero. Between James Street and Front Street sediment depths are about 27 inches. Sewer separation planned for the area is expected to rectify the deposition problem.
- Front Street: The flow velocity approaches zero at all times. From Middletown Avenue to River Street there are approximately 27 inches of silt in the sewer.
- ET Grasso Boulevard: between Orange Avenue and a 36" connecting sewer from a cemetery there are 12 inches of silt. The flow velocity in the Boulevard interceptor is reportedly less than 0.8 fps.
- Whalley Avenue: The WPCA reports that flows from Fitch Street slow the flow in the line on Whalley Avenue, causing sediment deposition just upstream where NPDES regulator 006 is located. The interceptor at the regulator has been reported to have over 13" of silt (ADS, 1998). The WPCA has determined that during wet weather, flows back up from the Boulevard Interceptor, causing a CSO at regulator 006. After the storm is over, siltation occurs in the Whalley Avenue line between the regulator and the Boulevard Interceptor. Though velocities in the Whalley Avenue sewer are insufficient to provide scouring, the flow from Fitch Street reportedly has high enough velocity to cause resuspension of the sediment in the manhole just downstream of the regulator site. The Chief Records Engineer of the WPCA has recommended the construction of a booster pump station that will temporarily provide self-cleansing velocities in the Whalley Avenue trunk sewer after storm events. The following sediment measurements were made by the WPCA in April of 1998:
 - West Rock Avenue to the West River: 4"
 - West River North to West River South: 8"
 - Fitch Street: 2"
 - Jewell Street: 10"

- Southeast of Jewel Street: 6"
- Osborn Avenue: 12"
- Fitch Street: 2 inches of silt were reported at Onyx.

Presently, sewer separation and reconstruction plans are scheduled to be developed for several of these areas to reduce sediment deposition unless this project identifies other alternatives.

Issues for Consideration

In this report, issues will be identified that may ultimately become part of the New Haven Long-Term CSO Control Plan; however, a complete evaluation and action plan with recommendations, including prioritization, schedule, and budget, cannot fully be developed until Tasks 5 and 6 have been completed. Therefore, in the interim, the following issues for consideration are offered regarding O&M for the sanitary and combined sewer collection system until a Long-Term CSO Control Plan is fully developed:

- Work with the interlocal towns and the CTDEP in implementing the provisions contained in the existing interlocal agreements to better coordinate operation and maintenance and to understand flow quantity and quality from sources outside of New Haven to the sewer system in New Haven. New Haven's efforts to institute the NMCs will be greatly enhanced if the contributory systems institute similar procedures and if New Haven is better prepared to address the impacts of the incoming flows.
- Secure and review copies of the infiltration/inflow (I/I) reports from the tributary towns as they become available. The Hamden (I/I) Study is presently complete. The Woodbridge I/I Study is in progress, and the East Haven I/I Study is presently in contract negotiations.
- Review the progress of compiling a silt survey to determine problem areas of the system where silt is being retained and decreasing the carrying capacity of the system and review the system improvements to correct and minimize the problem.
- Review the corrective action once it is implemented at Lowin Avenue to determine if the problem has been corrected or if some follow-up action is required.
- Perform a pipe risk assessment to prioritize inspections and to plan for potential future rehabilitation projects.
- Organize the data fields of various O&M tracking files to add to the GIS database under development as part of this project to ease O&M tracking, prioritization, documentation of activities, and visual displays of system information (i.e., determine appropriate data entry fields and terminology based on data of interest). In the meantime, continue to track preventative maintenance, cave-ins, complaints, and related activities as presently performed.

Overflow Structures

Inventory of Critical Facilities

There are 24 combined sewer regulators listed in Appendix A of the NPDES permit. As part of the sewer system mapping and modeling tasks, an additional regulator has been identified

at Temple Street and George Street. The regulators primarily consist of one pipe conveying dry weather and low wet weather flows downstream toward the East Shore WPAF and another pipe (the overflow pipe) which typically has either an elevated invert or a weir blocking its entrance. The overflow pipe only receives flows that reach a higher elevation (usually only during wet weather) and conveys these wet weather flows downstream toward surface waters. Figure 10 displays a general schematic of a regulator's function to direct flow during dry and wet weather circumstances.

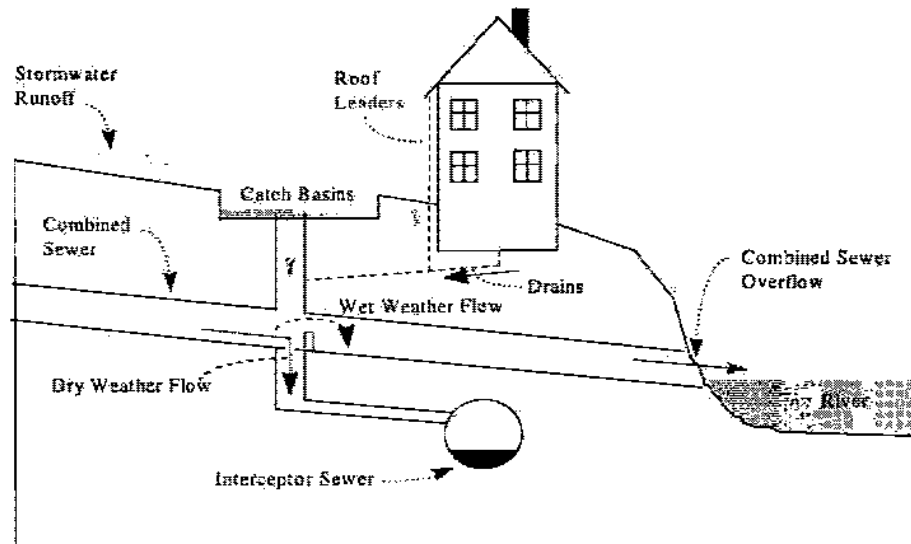


Figure 10 Typical Regulator Operation.

The 25 combined sewer regulators are tributary to 21 CSO outfall locations. Of these 21 CSOs, four (007, 008, 017 and 023) have been closed. Table 1 presents the status of permitted regulator locations to date. Figure 11 shows the CSO regulator locations. Figure 12 shows the CSO outfall locations. During the course of this project, changes may be made to the status of regulators in the system; any changes will be recorded and presented in future project documentation.

Critical facilities such as the CSOs and regulators are currently being surveyed and entered into a GIS database by CH2M HILL as part of this project to confirm the understanding of the existing system hydraulics and to develop a computer model of the sewer system. This work will be completed in the spring of 1998. Additional information can be found in the CSO Flow Regulators Notebook compiled by CH2M HILL (October 1997), which contains sketches, photographs, and other pertinent information. One copy is available at both the City's Engineering Department and the WPCA.

O&M Resources

Currently the WPCA Pollution Abatement Technician is responsible for inspection and reporting of the overflow structures utilizing a staff of 3 full-time and 2 part-time inspectors. The Wastewater System Superintendent, Collection System Superintendent, and Chief Records Engineer and their respective staff are responsible for repairs to the overflow structures. In general, this staffing goal is viewed by the manager as adequate to perform the required duties.

Table 1. Inventory of Permitted Regulator Locations

NPDES				
Discharge #	Location	Receiving Water	Status ¹	
002	E.T. Grasso Blvd. @ Lamberton St.	West River	Active	
003	E.T. Grasso Blvd. @ Orange Ave.	West River	Active	
004	E.T. Grasso Blvd. @ Legion Ave.	West River	Active	
005	E.T. Grasso Blvd. @ Derby Ave.	West River	Active	
006	Whalley Ave. @ Fitch St.	West River	Active	
007	Munson St. @ Canal St.	Bowen Field Lagoon	Closed ²	
008	Munson St. @ Orchard St.	Bowen Field Lagoon	Active ²	
009	Grand Ave. @ James St.	Mill River	Active	
010	East St. @ I-91	Mill River	Active ³	
011	Humphrey St. @ I-91	Mill River	Active ³	
012	Mitchell Dr. @ east of Nicoll St.	Mill River	Active	
013	Everit St. @ East Rock Rd.	Mill River	Active	
014	Thurnbull St. @ Orange St.	Mill River	Active ³	
015	James St. Siphon	Quinnipiac River	Active	
016	Poplar St. @ River St.	Quinnipiac River	Active	
017	Grand Ave. @ Front St.	Quinnipiac River	Closed ⁴	
018	Lombard St. @ North Front St.	Quinnipiac River	Active	
019	Pine St. @ North Front St.	Quinnipiac River	Active	
020	Quinnipiac Ave. @ Clifton St.	Quinnipiac River	Active	
021	East St. Pump Station	New Haven Harbor	Active	
022	Allen Place	Drainage Swale	Active	
023	Franklin St. @ Water St.	New Haven Harbor	Closed ⁵	
024	Boulevard Pump Station @ Sea St.	New Haven Harbor	Active	
025	Union Pump Station	New Haven Harbor	Active	

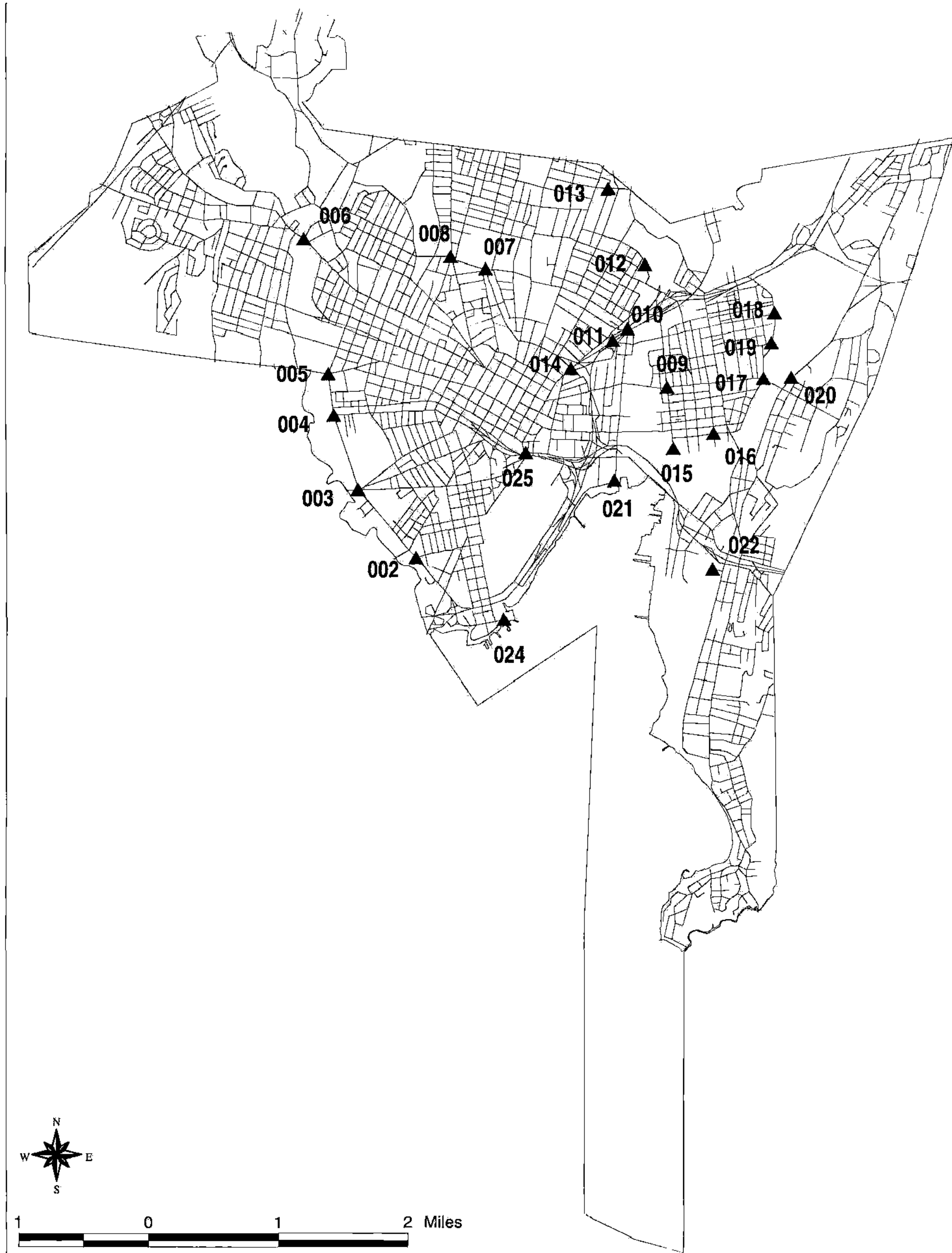
¹ Active denotes a location which has potential to overflow.

² Regulators 007 and 008 discharge through a common pipe. Regulators noted as eliminated in a 10/15/96 letter from Richard Miller/City of New Haven to Michael O'Brien/CTDEP; Cardinal Engineering confirmed that a concrete plug prevents discharge of sanitary sewage to the storm system through regulator 007. However, regulator 008 does not have a similar plug and is still physically open. In a large enough storm, a CSO could still occur through regulator 008.

³ Regulators 010, 011, and 014 discharge through a common outfall pipe.

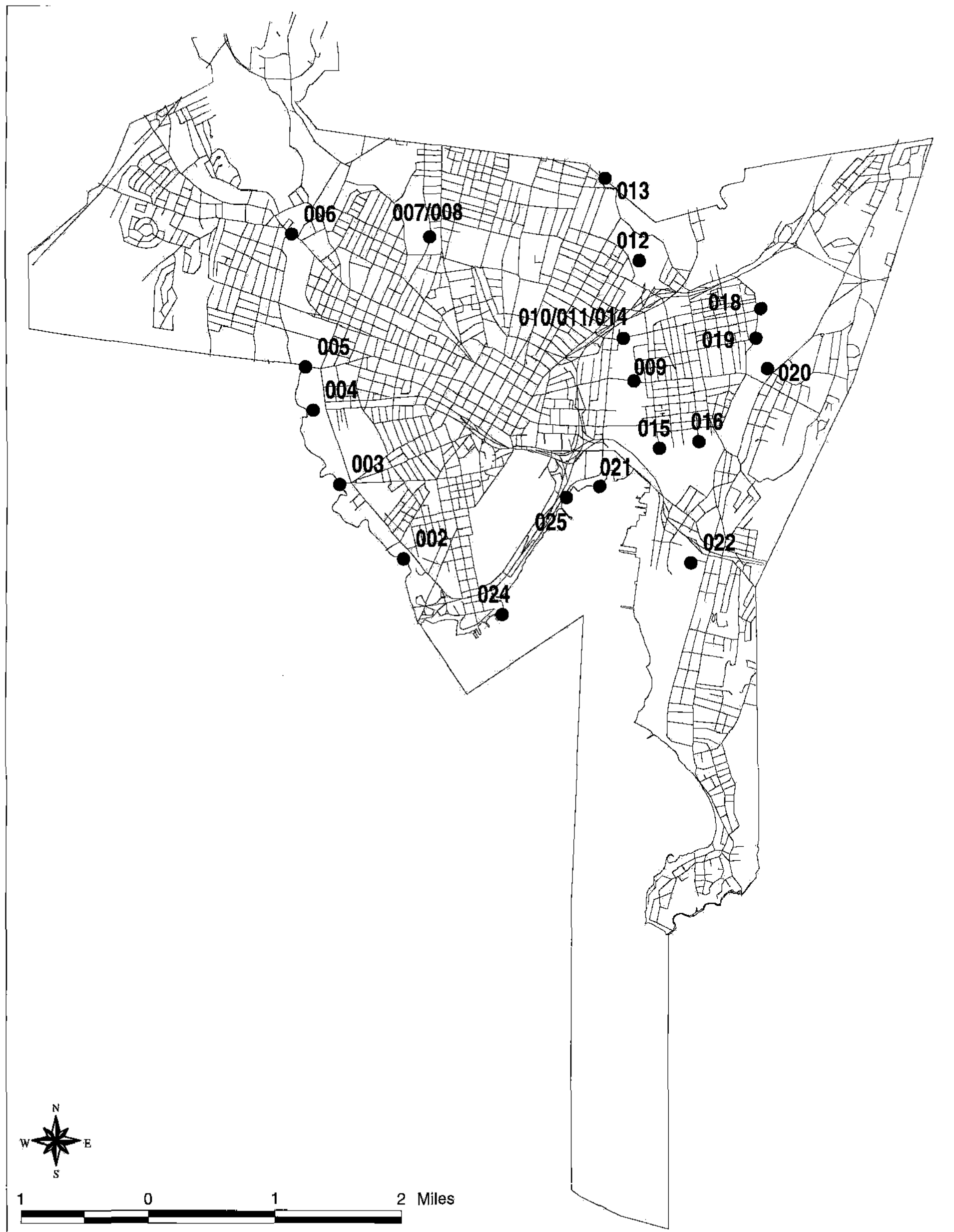
⁴ Noted as plugged per Cardinal Engineering site visits (Summer 1997 - see Regulator Notebook); now stormwater discharge only.

⁵ According to WPCA staff and information from a site visit by Cardinal, this regulator and outfall no longer exist due to sewer reconstruction.



- ▲ Regulators
- Streets
- City Boundaries

Figure 11
CSO Regulator
Locations



Outfalls

- Closed
- Open
- ▬ Streets
- ▭ City Boundaries



Figure 12
CSO Outfall
Locations

O&M Procedures and Schedules

Once a month the overflow structures are examined during the morning high flow period in dry weather and at low tide by two or three WPCA inspectors. During an inspection, the inspectors first examine the outfall to see if there is any flow being discharged and inspect the overflow structure's physical condition and the surrounding area. If the outfall structure is not visible from the manhole and the outfall is submerged, the inspectors determine if an overflow is occurring by comparing the height of the weir or pipe to the flow level. After inspection of the outfall, the regulator structure is examined. It is noted whether or not there is flow over the weir in the overflow chamber. If an overflow is flowing and there is no flow from within the overflow chamber, then probable causes are noted. An Inspection Report is completed and kept on file for each overflow structure visited. The inspection report is reviewed by the WPCA Pollution Abatement Technician to determine the status of the system, the need for follow-up inspection, or to identify corrective action if necessary. Examples of two CSO Inspection Reports are included in Appendix A. Note that the second form in the appendix with the circled checkmarks is the notation by the supervisor of unusual or problem areas to track. A copy of the newly revised inspection form is also included in Appendix A.

Repair, cleaning, and maintenance of the overflow structures is on an as-needed basis. If a problem is noticed during the inspection of the overflow structure, it is understood that it is to receive immediate attention. No chronic problems have been noted to date. A more detailed discussion of activities associated with prevention of dry weather overflows is discussed in a separate section of this report.

Issues for Consideration

In this report, issues will be identified that may ultimately become part of the New Haven Long-Term CSO Control Plan; however, a complete evaluation and action plan with recommendations, including prioritization, schedule, and budget, cannot fully be developed until Tasks 5 and 6 have been completed. Therefore, in the interim, the following issues for consideration are offered regarding O&M for overflow structures until a Long-Term CSO Control Plan is fully developed: Submit Table 1 to CTDEP for clarification of the status of regulator locations as an update to Appendix A of the NPDES permit

- Investigate the exact discharge location of NPDES No. 002 (the City or WPCA should have an easement). The discharge location should be free of debris and properly exposed for inspection and access. According to WPCA records staff, plans are in place to install a flex valve on the discharge.
- Provide access to the regulator structure at NPDES No. 003 (weir). Access to regulator structures at NPDES Nos. 004 (weir) and 009 (pipe) are within a few feet of the structures; consider improving access as opportunities arise.
- Coordinate construction of access to the regulator structure at NPDES No. 019 (pipe) with reconstruction of the sewer on Front Street.
- Investigate the source of flow (suspected to be only stormwater) tributary to NPDES No. 020 to confirm whether or not it contains any sanitary wastewater.
- Train inspectors in confined space entry and provide appropriate equipment for entry into overflow structures (i.e., NPDES Nos. 021 and 024) as necessary for adequate inspection

- Perform bacteriological sampling for bacteria of human origin of all CSOs that have normal, non by-pass, dry weather flows as planned to determine if sanitary wastewater is present in the discharge
- Identify, inspect, and document known system cross-connection locations. CH2M HILL is currently documenting cross connections between the separate and combined systems as they are found during mapping and computer model development of the system. However, information is still being verified; therefore, a list is not yet available. Additional study or inspection may be required to identify cross-connections not documented in the City's record drawings.
- Institute variable inspection intervals to provide more frequent inspections of problem areas with decreasing frequency after verification that the problems have been resolved (i.e., inspect at least once a day for first couple of days and once a week for remainder of month before returning to monthly schedule)
- Refine the CSO inspection form to include the following sections and to document that problems have been corrected: 1) suspected causes of unusual activity, 2) type of corrective action potentially needed, 3) type of corrective action performed and date, and 4) other follow-up activities needed (i.e. schedule for more frequent inspections)
- Include the CTDEP designated O&M Manager (presently WPCA's Wastewater System Superintendent) directly in overseeing the overflow structure O&M program, particularly with regard to inspection reports and recommendations for follow-up action

Tide Gates

Inventory of Critical Facilities

There are six locations in the combined sewer system where tide gates have been installed and two sites where installation of new flex valves is planned under a sewer separation project in late 1998 or early 1999. The six tide gate locations were recently visited as part of this project. An inventory and condition assessment is summarized in Table 2. The tide gate locations are shown in Figure 13. As noted in the table, five of the locations are active (i.e., not closed) CSOs, and one is a pump station bypass. Based on flow and salinity data collected and reviewed by WPAF staff, there is not significant tidal intrusion system-wide. Table 3 presents a comparison of overflow and tide elevations and indicates that all of the regulator locations with tidal influence match the locations presented herein. A brief description of each tide gate visited follows. Additional information on tide gates is included in the Tide Gate Notebook compiled by CH2M HILL (March 1998).

Morris Cove Pump Station

The Morris Cove pump station, located off Dean Street, has a 24-inch flap valve tide gate on the wet-well overflow. The tide gate appeared to be in fair condition during the site visit. To date, there is no known tidal intrusion at this location.

James Street Siphon

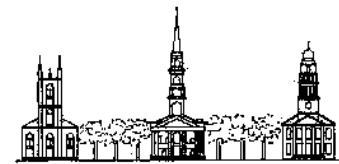
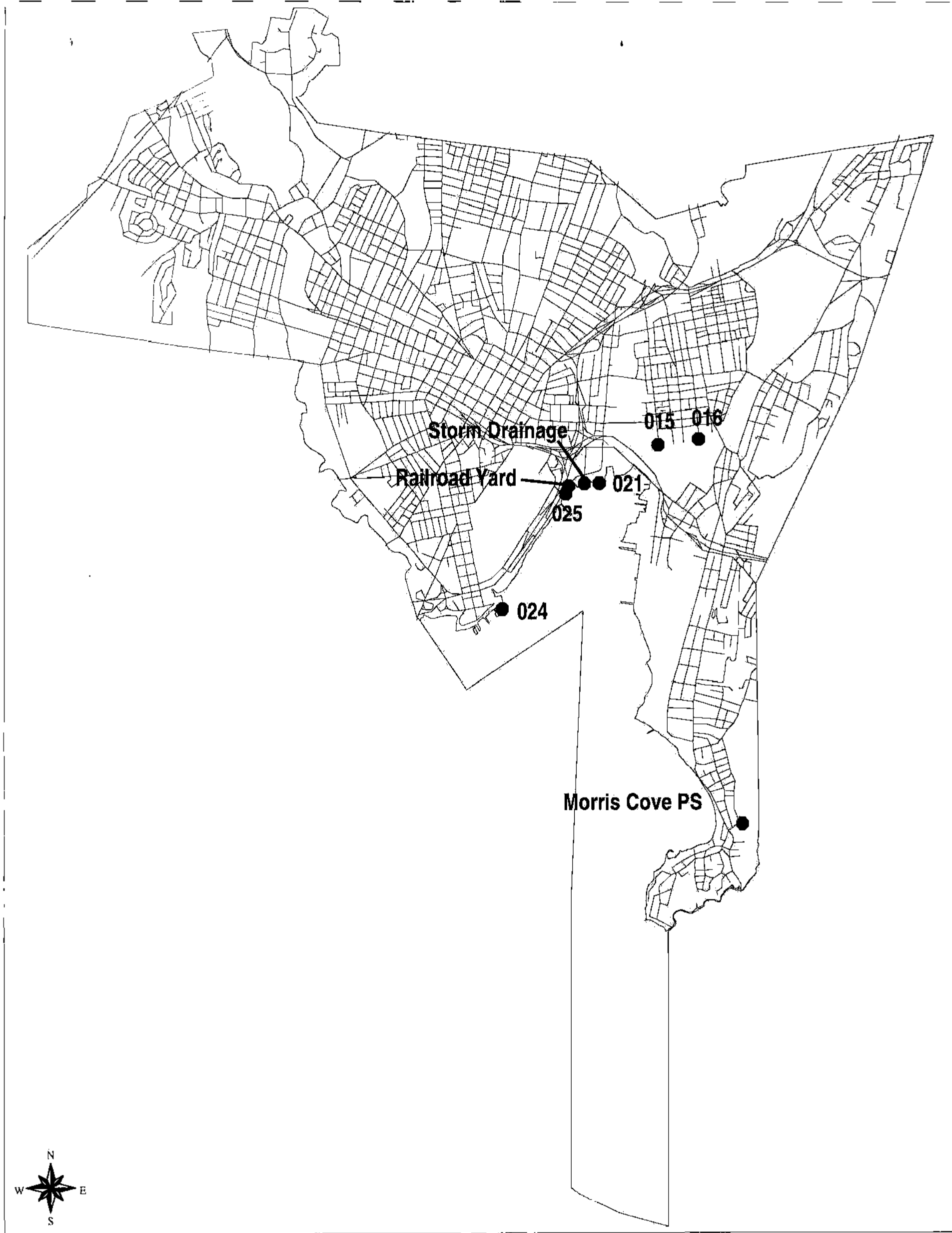
The James Street siphon tide gate, NPDES Discharge No. 015, is a circular flap valve located in a concrete chamber under the road approximately 25 feet upstream of the outfall. During the site visit, the flap valve appeared to be in fair condition. The hinges swing freely; however, there is some barnacle build-up, and the valve does not create a tight seal when

Table 2. Tide Gate Inventory and Condition Assessment

Tide Gate Location	Regulator Location	NPDES Discharge #	Receiving Water	Tidal Influence	Tide Gate Type	Condition (Dec. 1997)
Morris Creek	Morris Cove Pump Station	N/A	Morris Creek	Yes	Flap Valve	No leakage noted
Quinnipiac River @ James Street	James Street Siphon	015	Quinnipiac River	Yes	Flap Valve	Leakage noted ¹
Quinnipiac River @ Poplar Street	Poplar Street @ River Street	016	Quinnipiac River	Yes	Flap Valve	Leakage noted
New Haven Harbor @ East Street	East Street Pump Station	021	New Haven Harbor	No	Flex Valve	No leakage noted
New Haven Harbor @ Sea Street	Boulevard Pump Station	024	New Haven Harbor	Yes	2 Flap Valves	Leakage noted
Long Wharf: East of Canal Dock Road	Union Avenue @ State Street	025	New Haven Harbor	Yes	2 Flap Valves	Missing flaps

N/A = not applicable

¹ Tide gate repaired per WPCA staff (Spring 1998)



- Tidegates
- △ Streets
- City Boundaries

Figure 13
Tidegate
Locations

Table 3. Comparison of Overflow and Tide Elevations

Elevation (ft)	NPDES Location	Tide Gate	System Component or Water Level
39.0	008	No	Overflow pipe invert
22.2	013	No	Weir
17.0	014	No	Weir
14.8	022	No	Weir
14.2	012	No	Overflow pipes
14.0	020	No	Overflow pipe
13.7	010 ¹	No	Upstream weir
13.0	010 ¹	No	Downstream weir
12.7	- ²	No	Weir
11.7	011	No	Weir
10.5	006	No	Overflow pipe
9.1	005	No	Overflow pipe
8.5	018	No	Weir
6.9	004	No	Weirs
assumed ³ 6.6	019	No	Overflow pipe
6.4	003	No	Weir
6.3	021	Yes	Weirs
6.1	002	No	Weir
5.7	009	No	Weir
4.7	NA	NA	Highest observed water level (9/27/88)⁴
4.2	025	Yes	Weir
3.6	024	Yes	Weirs
3.4	016	Yes	Weir
3.3	NA	NA	Mean high tide
2.1	015	Yes	Weir
2.0	025	No	Weepholes under weir
0.0	NA	NA	Mean sea level

¹ There are two regulators at this location

² Weir is located at Temple St. and George St., upstream of regulator 025

³ Exact elevation is not known due to lack of access to weir

⁴ Data from NOAA website, 10/97

NA = not applicable

closed. According to ADS, who performed flow monitoring at this location between September and December of 1997 under Task 3 of this project, there is tidal intrusion occurring (ADS 1998). Tidal inflow at this location is of special concern because the overflow weir crest is below the mean high tide elevation. The WPCA indicates that this tide gate was inspected and cleaned in December of 1997.

Poplar Street at River Street

The Poplar Street tide gate, NPDES Discharge No. 016, is a square flap valve located in a concrete chamber between the end of the road and the river bank, approximately 20 feet upstream of the outfall. As noted during the field visit, the flap valve is in fair condition; the hinges are able to swing freely, however, the valve does not create a tight seal when closed. According to ADS, there is significant tidal intrusion occurring at this location (ADS 1998). The WPCA plans to have this tide gate inspected and cleaned during the late spring of 1998.

East Street Pump Station

The East Street pump station tide gate, NPDES Discharge No. 021, is a flex valve (duck bill) located in a concrete chamber approximately 30 feet upstream of the outfall. During the site visit, the flex valve appeared to be in good condition with no leakage or noticeable gap in the seal.

Boulevard Pump Station at Sea Street

The CSO at the Boulevard pump station at Sea Street, NPDES Discharge No. 024, has two 54-inch diameter flap valves. These flap valves are located in a concrete chamber under the street. Access was limited during the tide gate site visits; however, structural damage to the outfall was noted. The regulator upstream of the tide gate structure was recently visited by Cardinal Engineering. There are three overflow weirs in parallel. Each overflow weir consists of a concrete base topped with several timbers. Cardinal observed (and photographed) sea water entering the regulator chamber in between the timbers.

Long Wharf/Union Pump Station

At the Long Wharf location there are two 6-foot by 6-foot outfalls with missing flap gates outfalls which are connected to the regulator upstream of the Union pump station, NPDES Discharge No. 025. These outfalls are located along Long Wharf between Liberty Belle Cruises and the Rusty Scupper Restaurant. There has been significant tidal intrusion noted at the Union pump station, and the WPCA has indicated that a flex valve will be installed under a planned sewer separation project to be bid in late 1998.

ET Grasso Boulevard at Lamberton

Although there was no tidal influence noticeable at this location during the monitoring program, the WPCA intends to have a flex valve installed to prevent tidal inflow at NPDES # 002 under a planned sewer separation project (Kimberly/Columbus South) which will be bid in late 1998, with construction starting in either late 1998 or early 1999.

O&M Resources

Tide gates associated with the sanitary and combined sewer collection system are the responsibility of the WPCA. Because of the concern over tidal intrusion at the WPAF and the fact that several of the tide gates in the combined sewer system are associated with pump

stations, tide gate O&M has been associated with the pump station O&M program under the responsibility of the Maintenance Director.

O&M Procedures and Schedules

At the present time, there are no formal O&M procedures or schedules associated with the tide gates for the City of New Haven as this responsibility was recently formalized. However, in the past the WPCA has performed salinity testing and checked tide gates for potential tidal intrusion and repaired/replaced them as necessary.

Issues for Consideration

In this report, issues will be identified that may ultimately become part of the New Haven Long-Term CSO Control Plan; however, a complete evaluation and action plan with recommendations, including prioritization, schedule, and budget, cannot fully be developed until Tasks 5 and 6 have been completed. Therefore, in the interim, the following issues for consideration are offered regarding O&M for tide gates until a Long-Term CSO Control Plan is fully developed:

- Perform monthly inspections of tide gates to ensure that they are working properly. If more frequent inspection is required at problem areas, then this should occur until the problem is corrected.
- Repair/replace Poplar Street at River Street tide gate (NPDES #016) to maintain tight seal when closed. This tide gate is scheduled to be repaired in late Spring 1998.
- Inspect Boulevard pump station tide gate (NPDES #024) and repair/replace as necessary to prevent tidal intrusion.
- Provide protection from tidal influence at Union pump station (NPDES #025). A flex valve tide gate is scheduled to be installed under the ongoing sewer separation program. This segment of the sewer separation program, Kimberly/Columbus South, will be bid in late 1998, and construction will begin in late 1998 or early 1999.
- Prepare and use a standard form to document all inspections and repairs.
- Continue to measure the salinity and flow fluctuations at the plant as a means of determining significant inflow and salt water intrusion into the system.

Pump Stations

Inventory of Facilities

The City of New Haven has 15 pump stations operating within the sanitary and combined sewer collection system. The following description of each pump station is based on available records and recent interviews with WPCA staff and recent field visits of the pump stations as part of this project. The descriptions of the pump stations provided are summaries and should not be interpreted as being a complete description of the facilities at each station. The pump station descriptions contain the terms "underground" and "above grade." As used herein, the term "underground" will identify stations which do not have any superstructure, except for electrical and/or control enclosures. "Above grade" indicates stations that have superstructures. Notebooks and files maintained by Cardinal Engineering as a result of their system survey are available for review to amplify this information.

In general, according to inspectors, the pump stations operate as intended and do not have any chronic problems; however, some problems are identified in individual pump station discussions below. All pump stations are equipped with alarm systems, although at one station (Union/State) there has been some difficulty getting access to the phone lines. In the event of an overflow, there is sodium hypochlorite storage available at the three major pumping stations: Morris Cove, East Street, and Boulevard. In 1990-1991, the View Street and the State/Chapel Street pump stations were abandoned and, therefore, they are not described herein. Additional pump station data is listed in Table 4. Their locations are shown on Figure 14.

Barnes Avenue This prefabricated underground station, installed in 1961, contains two constant speed pumps capable of pumping 700 gpm each and two portable 150 kW generators. The station is equipped with a spare Flygt 32 horsepower submersible pump which can run from the wetwell to a bypass line around the station. The Barnes Avenue

pump station has an overflow pipe. An outfall is located to the west of the pump station between Interstate 91 and Middletown Avenue. At the outfall there was noticeable discoloration in the water, indicating the possibility of it being the overflow outfall. There is no tide gate nor does it appear to need one. According to pump station personnel, pumps at Barnes Avenue cavitate due to inadequate force main sizing. Force main joints (packed lead and oakum bell design) have been failing at a rate of two to four breaks per year.

Boulevard This station has equipment similar to the East Street Pump Station, except that it has a maximum design capacity of 34 mgd. There are four variable speed pumps capable of pumping 8,000 gpm each. The station has an emergency 1,300 kW, 1,625 kVA turbine. It is one of three pump stations that has on-line flow monitoring equipment. An average of 5.61 tons of debris is removed from the pump station per month.

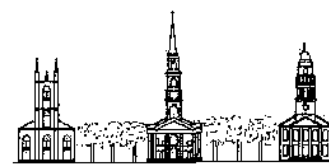
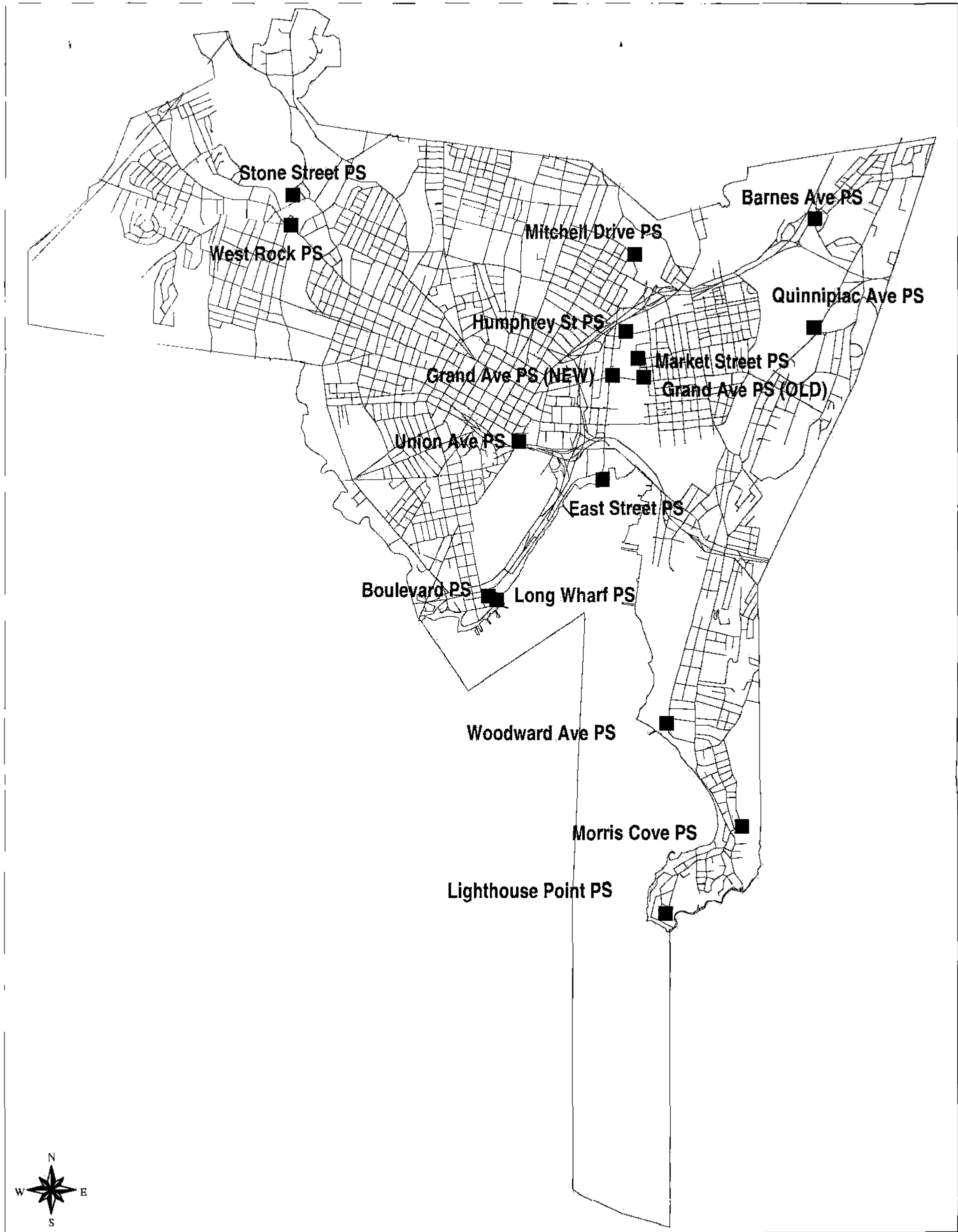
East Street This above grade station has a maximum design capacity of 40 mgd, with a current average daily flow of 12 mgd (the design average is 18 to 20 mgd as noted in the O&M Manual by Maguire Group in 1990). There are four variable speed pumps capable of pumping 9,900 gpm each and a standby 1,800 kW diesel fuel powered generator. The station was placed into service in two phases; the raw sewage pumps in February 1985, and the inlet works in February 1986. The station has raw wastewater screening and raw wastewater grit removal capacities. The 12 cubic yard container at the station collects an average of 10.66 tons of debris per month. Raw wastewater pumping occurs via a force main to the East Shore Plant. The East Street pump station is one of three stations that has on-line flow monitoring equipment.

Table 4. Pump Station Inventory

Pump Station	Address	Sewer System	Year of	Pump Manf.	Type	Elec.	HP	RPM	GPM	TDH (feet)	Inventory of			Wet Well Control	Bypass	Type of Bypass	Tide Gate Type	Primary Treatment		Comments
		Discharge Location	Construction								Spare Pumps	Telemetry	Emergency Power					Bar Screen	Grit Chamber	
Barnes Ave.	2 Barnes Ave.	Quinnipiac Interceptor	1961	Smith Loveless	#	*	40	1750	2@700	90	1	***	Portable Generator	Floats	Yes, Quinnipiac River	Wet Well Pipe	None, not needed			
Boulevard	19 Sea St.	East Shore Plant	1988	Gould	#	**	4-400	720	4@8000	160	0	SCADA (QEI)	1300 KW, 1625 KVA Turbine	Bubbler Tube	Yes, New Haven Harbor	Upstream Weir	Flap Valve	2-Mechanical	4-Mechanical	
East St.	1 East St.	East Shore Plant	1985/1986	Worthington	#	**	4-300	900	4@9900	98	0	SCADA (QEI)	1800 KW Natco Turbine	Bubbler Tube	Yes, New Haven Harbor	Upstream Weir	Flex Valve	4-Mechanical	4-Mechanical	
Grand Ave. (OLD)	443 Old Grand Ave.	James St. Interceptor	1978	Flygt	##	*	10	1750	2@425	34.5	1	***	Portable Generator	Floats	None	None	None			
Grand Ave. (NEW)	535 Grand Ave.	East Shore Interceptor	1991	Hydromatic	##	*	3	1750	2@100	24	0	None	Portable Generator	Floats	None	None	None			
Humphrey	145 Humphrey St.	East Shore Interceptor	1970	Chicago	#	*	5	1140	2@175	28.7	1	***	2 Portable 150 Kw Generators	Sealtrode Floatless	Yes, Mill River	Pipe	None			
Long Wharf	Long Wharf	Boulevard Interceptor	1988	Hydromatic	##	**	5	1750	2@350	22	0	None	Boulevard Generator	Floats	None	None	None			
Mitchell Drive	111 Mitchell Dr.	James St. Interceptor	1957	Smith Loveless	#	*	5	1150	2@400	17	0	***	Portable Generator	Floats	Yes, Mill River	Wet Well Pipe	None			
Morris Cove	2 Dean St.	East Shore Interceptor	1970	Fairbanks Morse	#	**	2-125	890	2@2580	104	1	***	Cummins Diesel	Bubbler Tube	None - Wet well overflow gate	None	Flap Valve	2-Manual		
				Gould			1-200	880	1@4865	96			500 KW Generator							
Market St.		James St. Interceptor	1979	Flygt	##	*	2.5	1750	2@160	n/a	1	***	Portable Generator	Floats	None	None	None			
Quinnipiac Ave.	1040 Quinnipiac Ave.	East Shore Plant	1950's/1963	Clow Yeoman	#	*	2-50	n/a	2@2120	n/a	0	***	Cummins 6 Cyl. Diesel 200 KW Generator	Float and Cam	Yes, Quinnipiac River	Upstream Pipe	None			
							1-50	1500	1@1500	n/a										
Stone St.	19 Stone St.	Boulevard Interceptor	1984	Flygt	##	*	2	1725	2@180	13	1	***	Portable Generator	Floats	None	None	None			
Union	1 State @ Union Ave.	East Shore Interceptor	1961	Fairbanks Morse	#	*	2-50	585	2@9000	28	0	***	Portable Generator	Floats	Yes, New Haven Harbor	Upstream Weir	Flap Valve	Removed/not operational		
							1-25	860	1@4000	29										
							1-25	860	1@2500	24.5										
West Rock	375 West Rock Ave.	Boulevard Interceptor	1971	Flygt	##	*	2.5	1725	2@150	n/a	1	***	Portable Generator	Floats	None	Pipe	None			
Woodward Ave.	40 Woodward Ave.	East Shore Interceptor	1940's/1967	Hydromatic	##	*	10	1750	2@300	60	1	***	Portable Generator	Floats	Yes, New Haven Harbor	Pipe	Flap Gate in MH			

Notes:

- # Dry Pit
- ## Submersible Duplex
- * 240 v/ 3Phase/60Cycle
- ** 480 v/ 3Phase/60Cycle
- *** Monitored WPAF by Tone Telemetry System - Dorado
- n/a data not available



- Pump Stations
- Streets
- City Boundaries

Figure 14
Pump Station
Locations

Grand Avenue (NEW).

This pump station, constructed in 1991, contains two submersible pumps capable of pumping 100 gpm each. Since the pump station was constructed and placed on line, there has not been much pump activity due to very low flows in the service area.

Grand Avenue (OLD) This underground station, constructed in 1978, contains two constant speed submersible pumps capable of pumping 425 gpm each and has a portable generator. The station is equipped with one spare pump.

Humphrey Street.

This underground station, constructed in 1970, contains two constant speed submersible pumps capable of pumping 175 gpm each. For portable pump hookup, a bypass line to the force main must be used. The station has two portable diesel powered trash pumps with 1.2 mgd capacity each, and two portable 150 kW generators.

Long Wharf Pump Station This underground station was installed in 1988, containing two submersible pumps with a capacity of 350 gpm each. This station has the generator at the Boulevard Pump Station as backup power. The station is at capacity and no longer cycles during peak flow. Instead, one pump runs continuously. An upgrade to this station is planned in the next year to incorporate flow from a nearby railyard. The upgrade will be funded, designed, and constructed by the Department of Transportation subject to the WPCA's approval. Initially flows will include construction dewatering and groundwater that is undergoing remediation, then eventually these flows will be replaced with more typical domestic and industrial flows. Preliminary plans indicate an upgrade to a total station output of 1400 gpm (a doubling of capacity) and a possible increase in the size of the outgoing force main.

Market Street This underground station, constructed in 1979, contains two constant speed submersible pumps capable of pumping 160 gpm each. The station is equipped with one spare pump.

Mitchell Drive This prefabricated underground station, installed in 1957, contains two constant speed pumps capable of pumping 400 gpm each and has a portable power generator.

Morris Cove (aka: Dean Street) This station, constructed in 1970, has two pumps capable of pumping 2,580 gpm and one pump with a 4,865 gpm capability. Pump #1 is equipped with a spare rotating assembly. The station has a standby diesel fuel power generator. According to pump station personnel, the wetwell capacity is inadequate. During prolonged or heavy rain events the station wetwells overflow, surcharging lines from East Haven and New Haven and causing neighborhood basement flooding. In addition, the elevation of the station is such that it cannot bypass during high tides because of the elevation of Morris Creek. Pump station personnel have also indicated that serious infiltration problems exist for both lines that discharge to this pump station. This station has recently been fitted with telemetry equipment so that flows can be monitored at the WPAF, although the final signal connections have not yet been made.

Quinnipiac Avenue This above grade station, constructed in the 1950's and renovated in 1963, contains three constant speed pumps capable of pumping 2,120 gpm, 2,120 gpm and 1,500 gpm respectively. The station is equipped with raw wastewater screens and has a standby diesel fuel power generator. The Quinnipiac Avenue pump station has an overflow pipe. Two outfalls were located during recent field visits in the wetland area of the nature preserve

behind the pump station. One of the outfalls is located west of the pump station, and the other is to the south. It was noted that there were no tide gates on these outfalls.

Stone/Hard Street This underground station, constructed in 1984, contains two constant speed submersible pumps capable of pumping 180 gpm each. The station is equipped with one spare pump.

Union This above grade station, constructed in 1961, contains four constant speed pumps, capable of pumping 2,300 gpm, 4,800 gpm, 8,300 gpm, and 8,300 gpm respectively. Pumping capacity is limited by a catch basin tied to a gravity sewer downstream of the force main. The station is equipped with raw wastewater screens and a portable power generator. At present, the mechanical bar screens are not operational, and no pretreatment is available at the station. Pump station personnel have identified large accumulations of grease in the station's wetwell. Sand and grit have accumulated in the vertical discharge piping of the lag pumps. The outfall tide gates associated with this pump station are missing their flaps.

West Rock Avenue This underground station, constructed in 1971, contains two constant speed submersible pumps, capable of pumping 150 gpm each, and a portable power generator. The station is equipped with one spare pump.

Woodward Avenue (aka: Fort Hale) This above grade station was constructed in the late 1940's and renovated in 1967. It contains two submersible pumps (one spare), capable of pumping 300 gpm each. The Woodward Avenue pump station has an overflow pipe. During a recent field visit, an outfall was located about 15 feet inland from the edge of the wetlands at the entrance area to Fort Hale Park. This outfall could be the overflow for the pump station; it was noted that there was no tide gate.

O&M Resources

O&M for the pump stations is the responsibility of the Maintenance Director, who has a staff of 4 operators/mechanics and a supervisor. Their responsibilities include inspection and equipment repair. The WPCA provides 24-hour response in emergencies. Some standby and backup equipment is available to the staff in cases of system failure. Available replacement pumps are noted on Table 4.

O&M Procedures and Schedules

All of the pump stations are unmanned and operate automatically. There are O&M manuals for the Boulevard, East Street, and Morris Cove pump stations. Most of these manuals are very broad in scope and are seldom used by maintenance personnel. Inspections and equipment manufacturers' data are more heavily relied upon. Inspection of all pump stations occurs twice a week, with the larger pump stations sometimes visited three times a week. During the inspection, there are always two WPCA personnel present. There are no procedures for documenting O&M activities at this time.

Cleaning and Repair Schedules

There is no regular maintenance program or repair schedule. When a piece of equipment breaks down, it is repaired. Those pump stations that have preliminary treatment (i.e., grit chambers, bar racks, etc.) have self-cleaning cycles. The self-cleaning cycle for the Boulevard and East Street pump stations is 20 minutes off and 10 minutes on. If a submersible pump breaks down, there usually are no spare parts available to repair it due to the age of the pump; however, new replacement pumps are usually available in the WPCA warehouse.

Overflow Correction Procedures

Some of the pump stations have an alarm system to notify staff immediately if a system failure occurs between site visits. If a pump station equipped with telemetry fails to operate properly, causing an overflow to receiving waters, the WPCA is notified by an alarm via telemetry. When an alarm is sounded, the goal of the Response Team is to respond to the incident within one-half hour of notification. If an overflow occurred, the incident is then reported to the Connecticut Department of Environmental Protection (CTDEP). The time frame from when the failure occurs to when it is corrected depends on the severity of the incident. If the overflow will be of long duration, sodium hypochlorite is added to the effluent for disinfection at those pump stations with sodium hypochlorite readily available (i.e., Boulevard, East Street, and Morris Cove). There are no chlorine contact chambers at the pump stations; therefore, the only chlorine contact time available after injection is in the discharge channel and/or receiving water.

Emergency Response Plan

In the event of an emergency situation, the WPCA has an Emergency Response Plan. According to the WPCA Emergency Response Plan, an emergency is defined as follows:

"A 'major' incident...that is an immediate threat to residents or their property or any other incident which in the opinion of the senior operating official would warrant immediate notification."

In addition, emergencies are categorized into two types: catastrophic and non-catastrophic. The WPCA's Plan defines catastrophic as:

" any material release...[that] is too hazardous for [WPCA] employees to contain or control. This could be due to the hazards of the released material, the location of the release, suitable protective equipment available, weather conditions, training level of the employees onsite at the time of the release, etc."

Issues for Consideration

In this report, issues will be identified that may ultimately become part of the New Haven Long-Term CSO Control Plan; however, a complete evaluation and action plan with recommendations, including prioritization, schedule, and budget, cannot fully be developed until Tasks 5 and 6 have been completed. Therefore, in the interim, the following issues for consideration are offered regarding O&M for the pump stations until a Long-Term CSO Control Plan is fully developed:

- Repair/replace (or document why repair is unnecessary) the mechanical bar screens and replace the missing tide gate flaps at the Union pump station
- Investigate all of the pump station outfall locations and determine conditions of outfalls and whether or not tide gates exist or are needed
- Install run-time recorders or SCADA equipment at all pump stations to track operations

Treatment Facilities

The City of New Haven combined sewer collection system is limited to minor treatment facilities at the pump stations (previously noted and in place principally for pump protection,

not necessarily wastewater treatment), bar screens at the James Street siphon (previously noted), and the East Shore Water Pollution Abatement Facility (WPAF). Because O&M of the East Shore WPAF is well documented in several reports and because the East Shore WPAF will be reviewed in detail in later reports of this project, this report will only provide an overview of the facility.

The East Shore WPAF is a 40-mgd treatment facility that has been operating since the late 1970's. Average daily flow is 38 mgd. In addition to the City of New Haven, this treatment facility also serves parts of the following Connecticut municipalities: Hamden, Woodbridge, and East Haven. During wet weather, flows at 60 mgd and lower receive full treatment, and flows above 60 to 100 mgd receive primary treatment and chlorination; the effluents are blended before discharge to receiving waters. The effluent is monitored for contaminants in accordance with the discharge permit and applicable regulations.

Liquid treatment facilities include influent screening, grit removal, primary clarification, aeration basins, secondary clarification (modified activated sludge), and disinfection with sodium hypochlorite before discharge of the treated effluent to Long Island Sound. The aeration basins were converted from mechanically aerated basins to a fine bubble diffused air system with nitrogen removal in 1996. Nitrogen removal is accomplished with a recycle from the end of the aeration basins to an anoxic zone in front of the aeration basins (Modified Ludzak-Ettinger Process). Solids handling facilities include primary sludge gravity thickening and waste-activated sludge gravity belt thickening. Solids disposal is accomplished at the plant using a belt press dewatering system and sludge incinerator.

Existing odor control facilities include the Ambi scrubber on the roof of the Main Building, the inlet works scrubber, and a new package scrubber installed outside the Inlet Works Building. The package scrubber treats odorous air from the raw sewage channels in the basement of the building and the existing inlet works scrubber treats any remaining odorous air from within the building. An odor treatment system for the primary clarifiers is currently being constructed. The system consists of a flat aluminum cover system and a two-stage packed tower scrubbing system. The system will be completed and operational in early 1999. There is another scrubbing system for the belt filter press room which was installed and is currently operated by New Haven Residuals, a contract operator which also operates the solids system.

The WPCA Wastewater Systems Superintendent has overall responsibility for the O&M programs for the WPAF. The WPCA Process Control Superintendent reports to the Wastewater Systems Superintendent and is responsible for operations, process control, and the laboratory for the WPAF. The WPCA Maintenance Director also reports to the Wastewater Systems Superintendent and is responsible for the maintenance programs for the WPAF. The existing inspection and maintenance program includes preventative maintenance and repairs to critical components of the treatment facility. A computerized system tracks preventive maintenance intervals and is a repository for repair documentation. Preventive maintenance is performed per manufacturer's specifications as well as DEP standards. Spare parts for most critical components are available from storage.

Pretreatment

Introduction

The EPA CSO Policy guidelines regarding review and modification of pretreatment requirements are intended to ensure that the effects of non-domestic discharges to the combined sewer system are minimized during wet weather events and to keep combined sewer overflows at a minimum by modifying the inspection, reporting, and oversight procedures within pretreatment programs.

The WPCA's current NPDES permit has the following pretreatment requirement:

"No new discharge from a single source to the POTW of industrial wastewaters or cooling waters may be authorized without the discharger first obtaining a permit from the Commissioner."

The WPCA and the CTDEP have established pretreatment programs to determine the quantity and concentration of pollutants of non-domestic discharges to sewer systems. Both the City of New Haven and the State of Connecticut issue Non-Domestic Wastewater Discharge Permits to non-domestic sources for discharges to sanitary or combined sewers. A permit holder must comply with both permits; if the permits differ, the permit holder must comply with the most stringent discharge limitations. The objective of these programs is to minimize any potential adverse impacts of non-domestic discharges to the sewer collection and treatment system and to minimize discharge of non-domestic waste to receiving waters via CSOs. This section provides a review of the existing pretreatment programs, a listing of the permit holders, their locations, and other pertinent information.

Review of Existing Pretreatment Programs

WPCA Program

Permitting

The City of New Haven Sewer Use Ordinance Section 25-26 requires that all producers of industrial discharges apply for a permit from the WPCA. The permit provisions do not apply to "restaurants, automobile dealers and/or gasoline service stations without automotive repair shop or car-wash facilities, and food dispensing services, or building drains of industrial waste producers where the discharge is solely domestic or sanitary wastewater; provided, however, that these exempted operations may be required to install a sampling well as required in section 25-35 of this chapter and, further, that any producer exceeding the limits established in section 25-32 and/or two hundred and fifty (250) mg/l of TSS and/or BOD will not be excluded from meeting all of the requirements of this chapter." The Sewer Use Ordinance § 25-26 through § 25-29 enumerate several requirements with which industrial dischargers must comply when submitting a permit application, and addresses such topics as permit issuance, renewal, conditions, suspension, and revocation. Further sections address many other facets of industrial discharges to city sewers. The permit application includes a discharge report, description of pretreatment facilities, and any other information that may pertain to the pollutants discharged into the system. A sample industrial discharge

questionnaire, permit application, review form, inspection report, and permit is included in Appendix B.

Pretreatment Program Activities

The pretreatment program staff visits each permitted facility at least four times per year (quarterly) to inspect the facility, discuss particular problems or initiatives to ensure that program requirements are being followed, and to take samples, as appropriate. These samples come from within the site, or outside the facility, as needed, to address specific concerns. The constituents measured vary depending on the site and the parameters of concern. If there is justification for increased visits, the staff will perform inspections more frequently. The pretreatment program maintains an inspection report form to document the visit and serve as a basis for follow-up activities. Additionally, a list of is maintained to aid in addressing corrective measures.

One issue of concern is the control of the quality of wastewater that New Haven receives from three regional communities. Although the interlocal agreements with these communities require them to have acceptable sewer ordinances in place and to control wastewater quality, implementation and enforcement have been lacking. The WPCA is currently attempting to work with these towns to develop and implement effective pretreatment programs within their jurisdictions. The WPCA charges higher rates to industrial users with heavy strength wastewater in New Haven and is currently working with the three nearby towns to locate additional heavy strength sources in the service area.

The WPCA currently takes quarterly samples at the interceptors that convey wastewater from each of the local contributory communities, namely Woodbridge, Hamden, and East Haven. They also take samples from four locations near the treatment plant which are representative of the same flows from these communities after they have combined with New Haven flows that discharge to the same interceptors. This information can be used to characterize the flows from these communities and compare it to city data.

CTDEP

State of Connecticut Statutes Sections 22a-430-3 and 22a-430-4 of the water discharge permit regulations give the Connecticut DEP authority to issue permits and monitor non-domestic discharges. The Connecticut DEP has issued several permits for pretreatment within New Haven's combined sewer area. Connecticut DEP monitors the program by reviewing the industries' monthly Discharge Monitoring Reports (DMRs) and through periodic visits to the source. A sample permit and DMR is included in Appendix C of this report.

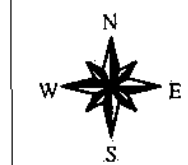
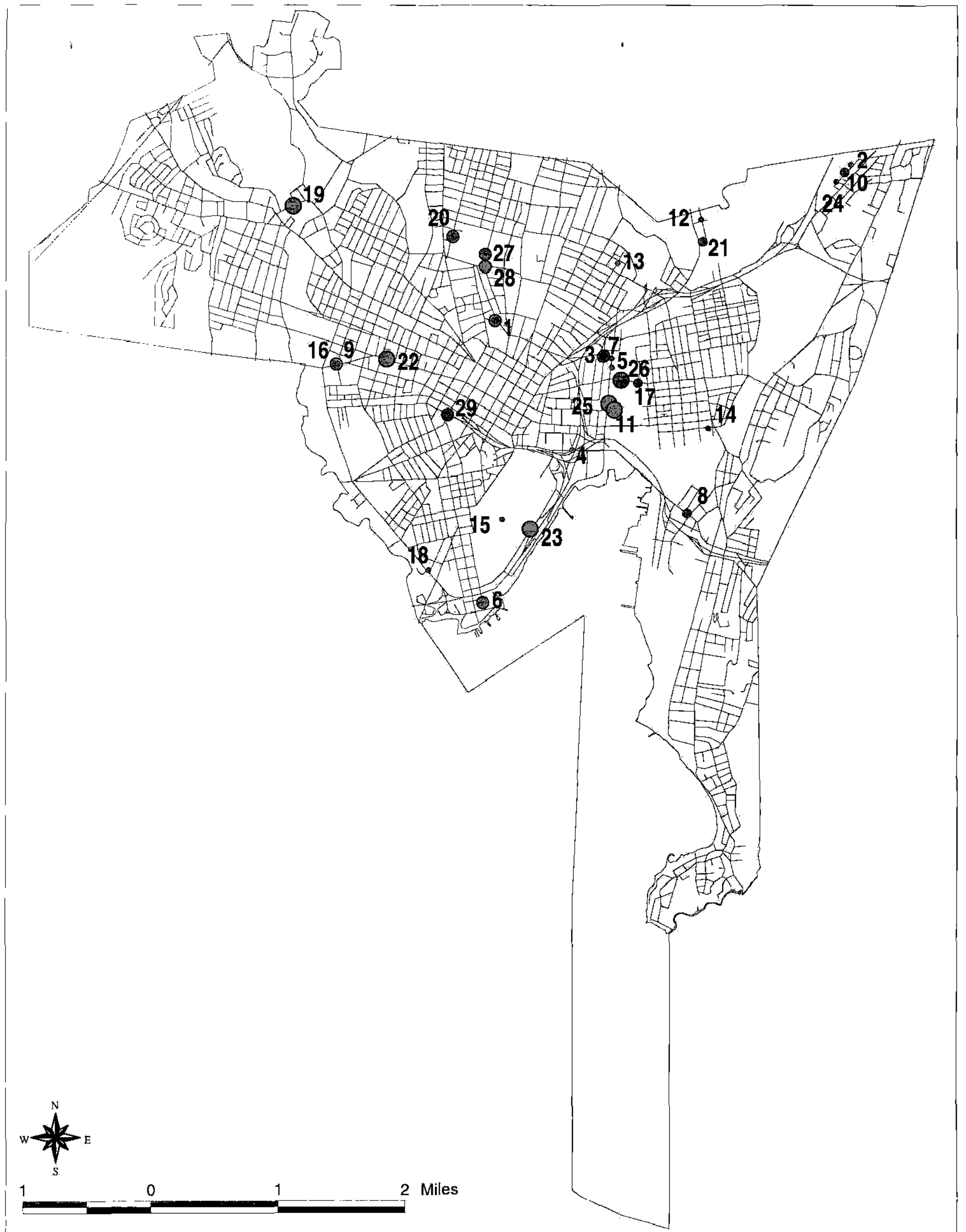
Identification of Non-Domestic Sources and Discharge Locations

Sources of non-domestic discharges into the combined sewer systems are located throughout the City of New Haven. Compiled from DEP and WPCA Industrial Discharge Permit listings, 29 major sources were identified. A listing of these sources can be found in Table 5. Table 5 identifies the permittee for the Industrial Discharge Permit, their address, process volume, whether the permit is filed with the DEP, WPCA, or both, and if pretreatment is involved. Their locations have been added to the GIS database prepared by CH2M HILL as shown on Figure 15. The major industrial sources identified in Table 5 and Figure 15 are currently under review by WPCA staff and subject to change. A complete listing of permit holders according to CTDEP and WPCA records is provided in Appendix D. Critical changes to the

Table 5. Inventory of Permitted Non-Domestic Wastewater Sources ¹

No.	Permittee	Service Address	Mailing Address	Standard Industrial Classification (S.I.C.)	Data List		Maximum Daily Process Volume (gpd)		Pretreatment	Time of Discharge	Comments ²
					DEP	WPCA	DEP	WPCA			
1	American Linen Supply Co. (Ameripride Linen and Apparel Services)	63 Lock St.		7219	X	X		50,000	X	N/A	
2	American Seal & Engineering Co.	156 Gando Dr.		3499	X	X	360		X	3 times-120 gal 8 hrs for 15 min	every
3	ARAMARK Uniform Service (Aratex Services Inc.)	220 Wallace St.		7212		X		40,000	X	Continuous 5:30am-2:30pm	Closed loop system Non-Industrial
4	C. Cowles & Co.	83 Water St.		3089,3646,3465,3443	X	X	2,500	6,000		Continuous 7am-3:30pm	
5	CHR Furon	407 East St.	P.O. Box 1911	2672,2822,3069,2295	X	X		1,000		Continuous 7am-3pm	
6	DOT Rail Services/Metro-North Commuter RR (National Railroad Passenger Corp. - Amtrak Maintenance Facility)	54 Hallock Ave.	400 N. Capitol St. Washington, D.C.	401	X		45,000			Continuous	WPCA uses DEP permit
7	Edsan Chemical	438 East St.		284		X		100		Continuous 8am-5pm	DEP is investigating
8	Forbes Ave. Car Wash	245 Forbes Ave.		7542	X	X	5,500			Continuous 8am-6pm	
9	Furniture Doctor Corp.	144 Derby Ave.		7641	X	X		150	X	Every few days	
10	G & O Manufacturing Co.	100 Garido Dr.	P.O. Box 1204	3499	X	X	10,000	10,000		1 day every 4 months	
11	H.B. Ives Inc.-Division of Harrow Products, Inc.	50 Ives Pl.	P.O. Box 1887	3429	X	X	110,000	110,000	X	Continuous 6am-12am	
12	H. Krevit & Co. Inc.	73 Welton St.	P.O. Box 9433	2810,5160	X	X	900	900		Every Friday afternoon	
13	Lehman Brothers Inc.	191 Foster St.		2752,2753	X	X		1,250		Every 7-10 days	
14	Medwaste Management, Inc. of New England (El Du Pont De Nemours Co.)	46 River St.		4959	X	X	1,500			Continuous	
15	Metro-North Commuter MU Shop (Metro-North Railroad)	2 Brewery St.	Grand Central Sta. New York, NY	401	X		1,500		X	Continuous	
16	New England Linen Supply	149 Derby Ave.		7213		X		30,000	X	Continuous 20 hr period	Non-Industrial
17	New Haven Brewing Co. Inc.	458 Grand Ave.		2082	X	X	5,000			N/A	
18	New Haven Fire Department (New Haven Regional Fire Training Academy)	230 Ella Grasso Blvd.	P.O. Box 374 952 Grand Ave.	8299	X	X	100	100		During drills	
19	New Haven Manufacturing Corp.	446 Blake St.		3579	X	X	91,000	100,000	X	Continuous/batch 7am-4pm	
20	Olin, Metals Research Laboratories	91 Shelton Ave.		8731,3679,3497,3341	X	X	42,000	40,000		2 days every few years	
21	Polychem Corporation	12 Lyman St.		2844		X		5,000		Intermittent 7am-5pm	DEP is investigating
22	Hospital of St. Raphael	1450 Chapel St.		8062	X	X		120,000		Continuous	
23	Sargent Manufacturing Company	100 Sargent Dr.		3429	X	X	144,000	144,000	X	Continuous 6am-11pm	
24	Schulz Electric Company	30 Gando Dr.		3625,3621,3677,3823 7349,7629,7694,5063	X	X	2,000			Continuous	
25	Simkins Industries	259 East St.		2631	X	X		220,000	X	Intermittent 15-45 min cycles	
26	United Illuminating Co. - English Station	510 Grand Ave.	157 Church St. P.O. Box 1564	4911	X		115,200			N/A	The station is shut down
27	U.S Repeating Arms Co.	344 Winchester Ave.		348	X	X		40,000		Continuous 7am-12am	
28	U.S Repeating Arms Co.	275 Winchester Ave.	344 Winchester Ave.	348	X	X		30,000		N/A	
29	Yale New Haven Hospital	20 York St.		8062	X	X		85,000		Continuous	

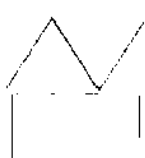
¹ This table is currently being reviewed and updated by WPCA staff² Comments - information gathered from WPCA staff



1 0 1 2 Miles

Industries (process gpd)

- 0 - 2500
- ◐ 2501 - 10000
- ◑ 10001 - 85000
- 85001 - 220000



Streets
City Boundaries



Figure 15
Permitted Non-Domestic
Wastewater Source Locations

list of major industrial sources will be presented as it becomes available in future project documentation. A review of the locations of the 29 major sources and preliminary sewer system flow routing indicate the following:

Discharges to the Quinnipiac River:

- 3 sources upstream of CSO 020
- 1 source upstream of CSO 016

Discharges to the Mill River:

- 3 sources upstream of CSO 009 and, therefore, CSO 015
- 1 source upstream of CSO 012 and, therefore, CSO 010/011/014

Discharges to the West River:

- 1 source upstream of CSO 006
- 4 sources upstream of CSO 005 and, therefore, CSOs 004, 003, and 002 on the West River, and 024 on New Haven Harbor

Discharges to New Haven Harbor

- 12 sources upstream of CSO 021
- 3 sources upstream of CSO 024

Direct Discharges to the WPAF

- 1 source

Large Volume Sources

Large volume sources are those industries that have a process volume discharge greater than or equal to one hundred thousand gallons per day (100,000 gpd). Large volume sources are also identified as those industries that discharge their process volume over a short period of time compared to those that are controlled over a long period of time. There are six large volume sources in New Haven: H.B. Ives Inc, Harrow Products (110,000 gpd), New Haven Manufacturing Corp. (100,000 gpd), St. Raphael Hospital (120,000 gpd), Sargent Manufacturing Co. (144,000 gpd), and Simkins Industries (220,000 gpd).

Source Quality

The following constituents are listed in the characteristics of wastewater regulated under the Industrial Discharge Permit: arsenic, barium, boron, cadmium, chromium, copper, cyanide, lead, manganese, mercury, nickel, selenium, silver, and zinc. Constituent concentrations vary by source. As stated in the Permit, the maximum concentrations listed per source shall not be exceeded by a factor of 1.5, at any time, as measured by a grab sample. If exceeded, it shall be considered a Discharge Permit Violation. The sampling frequency for both the DEP and the WPCA permits varies depending on the permittee and the specific wastewater being discharged. Sampling frequency can vary from yearly to weekly.

Issues for Consideration

In this report, issues will be identified that may ultimately become part of the New Haven Long-Term CSO Control Plan; however, a complete evaluation and action plan with recommendations, including prioritization, schedule, and budget, cannot fully be developed until Tasks 5 and 6 have been completed. Therefore, in the interim, the following issues for consideration are offered regarding the pretreatment program until a Long-Term CSO Control Plan is fully developed: Work with the interlocal towns and CTDEP in implementing the provisions contained in the existing interlocal agreements to better coordinate operation and maintenance and to understand flow quantity and quality from sources outside of New Haven to the sewer system in New Haven. New Haven's efforts to institute the NMCs will be greatly enhanced if the contributory systems institute similar procedures and if New Haven is better prepared to address the impacts of the incoming flows. This situation was previously described under the Operation and Maintenance section of this report and, therefore, not repeated herein.

- Complete further evaluation regarding the location of the industrial discharges with regard to potential overflow impacts associated with these flows. For dischargers with constituents of concern, it is possible to modify the operation of the system to preferentially route flows to the plant during storm events as opposed to risking overflows.
- Review the industrial discharge constituents and attempt to prioritize sites with constituents of most concern. This prioritization can be used to coordinate inspection programs, influence the pretreatment requirements, and minimize impact on the CSO system.
- Review the discharge conditions for each permittee and address potential to control discharges during wet weather events in the permit applications.

Prohibition of Dry Weather Overflows

Introduction

The CTDEP defines bypasses and the requirements for reporting them as follows (from CTDEP memo dated 3/96 authored by William Hogan, Engineer of WPAF, Water Management Bureau):

"A by-pass in a wastewater treatment facility is constituted by the by-passing of any major piece of equipment which may cause deterioration of final effluent quality. It is not limited to the total by-pass of a treatment facility. Examples of some situations (not intended to be all-inclusive) for which a by-pass form must be submitted are:

A. Within a Collection System:

1. Surcharging of a sewer line causing an overflow of sewage to the surface.
2. Overflow or by-pass of sewage at a sewage pumping station."

The NPDES permit states that bypasses of the combined sewer system are prohibited during dry weather and if any bypasses occur they must be reported in accordance with section 4 of the permit. The EPA control for prohibition of dry weather overflows includes such preventative measures as appropriate O&M of the system and modifications to regulators and overflow devices. The purpose of this task is to review and document procedures for inspecting the system and taking corrective action to prevent dry-weather overflows (DWOs).

Like most communities, the City of New Haven has had DWOs in the past. The following sections provide information in reverse chronological order about documented DWOs and related observations. Copies of recent bypass reports are provided in Appendix E.

DWOs Documented by WPCA's Dry-Weather Overflow/ Bypass Reports

From the reports dated 3/6/98 and 5/4/98 by William Root/WPCA: A dry weather overflow at NPDES # 009 (James St and Grand Ave) was discovered during the monthly CSO inspection on March 2, 1998. On March 6 (at the time of the initial report), the bypass condition had not yet been resolved and the overflow had been occurring for approximately 100 hours at a rate varying between 5 and 25 gpm. A chlorine drip system was installed and monitored two times per day, and jet-rodding and TV inspection were instituted. After repeated servicing of the sewer line, the magnitude of the bypass had lessened but the overflow was not eliminated, so the weir was raised 6" on April 7, 1998. Observations since then confirm that the overflow has ceased.

From the reports dated 3/6/98 and 5/4/98 by William Root/WPCA: On March 2, 1998, it was observed that short duration bypasses were occurring during morning peak flow hours at NPDES # 013 (Everit St and East Rock Rd). Initially, a blockage was suspected, and the sewer line was jet-rodded, resulting in an end to the bypass on March 5. As a precaution, the

overflow pipe was dosed with chlorine during the morning peak flow hours. The site is influenced by an upstream pump station in the town of Hamden, and dry weather overflows were occurring during the morning high flows at the beginning of the pumping cycle. On March 25, 1998, the weir was raised 6", and observations since that time have indicated that no further bypasses have taken place.

From the report dated 2/25/98 by Thad Fura/WPCA and a follow-up report dated 5/4/98 by William Root/WPCA: A dry-weather overflow occurred between 2/22/98 and 2/24/98 at NPDES # 004, discharging into the West River. It was estimated in the report that less than 100,000 gallons were discharged during a period of 48 hours. The dry-weather overflow was exacerbated by a wet weather overflow during the period. It was surmised that root obstruction downstream had caused surcharge of the sewer, resulting in high depths. There are three weirs in series at this site, and as corrective action, on February 27, 1998, the two lower weirs were raised to the level of the highest weir crest to help prevent future DWOs. In addition, this location is scheduled to have preventative cleaning approximately five times per year.

From the report dated 11/3/97 by Thad Fura/WPCA: A DWO occurred during October 1997 at NPDES # 015 (James Street siphon). Apparently, a bar screen failed and an overflow occurred. The alternate screen, which failed to start up when the primary screen failed, was activated by WPCA personnel and the overflow ceased. Alarm and control systems were subsequently examined to determine why they did not activate, and the primary mechanical screen was repaired. Based on the date of last inspection, it was estimated that the overflow could have been occurring for 5 days, at an estimated rate of 1 mg per day. Once the WPCA was notified, the overflow was corrected within an hour.

From the report dated 7/12/91 by Thad Fura/WPCA: A small amount of flow in the overflow pipe at NPDES # 009 (Grand Avenue at James Street) was noticed. At the time of reporting, the overflow appeared to occur only during peak dry-weather flow hours and was thought to be due either to increased dry-weather flow or damage or deterioration of the overflow weir. Calcium hypochlorite tablets were placed in the line to provide disinfection until the investigation could be completed. No information was available confirming that the DWO was eliminated; however, there were no new reports of a recurrence of the DWO.

CTDEP Observances

From a memo by Frank Ogonski/Senior Sanitarian of the Connecticut State Department of Health, dated 1/29/71, regarding a comprehensive field inspection of overflow sites: Dry-weather overflows were observed at NPDES #s 012, 015, 016, 018, and 023. Details are provided below:

- 012 (Mitchell Drive east of Nicoll Street) – It was noted that raw sewage and a large amount of bunker oil were being discharged to the Mill River. A City of New Haven Engineering Department report dated 1/4/73 indicates that the overflow system at this site was rebuilt in December 1972.
- 015 (James Street siphon) – No overflow was observed on 1/20/71, but it was noted that one was occurring during a pump station inspection on 1/14/71. In addition, the memo stated that past inspections had indicated overflows could occur during periods of high flow even if the sewer, siphon, and bar screen were properly maintained, due to the exceedance of the siphon's capacity. A new siphon was built in the 1970's, and only one overflow (in 1997) has been documented since that time.

- 016 (Poplar Street at River Street) – The memo indicates that the weir and outfall were inspected and found to be discharging sewage into the Quinnipiac River.
- 018 (Lombard Street at North Front Street) – The report states that the weir was not visible during inspection due to the depth of flow, but the outfall was observed to be discharging sewage into the Quinnipiac River.
- 023 (Franklin Street at Water Street) – Due to highway construction and redevelopment in the area surrounding this site, “the old overflows no longer occur,” according to the memo. However, it was noted that inspection of a storm basin revealed flowing sewage and a dye test performed at a later date indicated a sewage discharge along Long Wharf.

Procedures to Prevent DWOs from Occurring

Overflow structures are inspected and maintained on a monthly basis. In addition, the two largest pump stations—East Street and Boulevard—are monitored continuously for bypasses. Inspection reports are kept on file at the WPCA. In the event that an overflow occurs, an investigation is conducted in order to determine its cause. Correction measures are then taken, and a report (as referenced above) is filed by the WPCA’s wastewater system superintendent, Mr. Thaddeus Fura.

Notification Procedures

The NPDES permit requires notification of the Department of Environmental Protection’s Water Management Bureau (Municipal Enforcement Section), Department of Health Services (Water Supply Section and Recreation Section), and the local Director of Health by telephone within 2 hours (during standard business hours) of learning about a bypass. A written report must be submitted to the Commissioner within 72 hours of “each occurrence, or potential occurrence, of an emergency diversion or bypass of untreated or partially treated sewage” (NPDES permit).

When a DWO occurs, a report is prepared by the WPCA indicating, among other pertinent data, the date of occurrence, estimated quantity of flow discharged, duration of overflow, reason for the overflow, and resulting actions to be taken. The report is sent to the State Department of Environmental Protection and copies are sent to the following agencies:

- State Department of Agriculture/Aquaculture (due to a concern for shellfishing)
- Department of Public Health
- Department of Health Services/Water Supply Section
- The City of New Haven Engineering Department
- The City of New Haven Health Department
- WPCA’s General Manager and Wastewater Maintenance Superintendent.

Issues for Consideration

In this report, issues will be identified that may ultimately become part of the New Haven Long-Term CSO Control Plan; however, a complete evaluation and action plan with recommendations, including prioritization, schedule, and budget, cannot fully be developed until Tasks 5 and 6 have been completed. Therefore, in the interim, the following are offered regarding DWOs until a Long-Term CSO Control Plan is fully developed:

- Document follow-up activity performed as corrective action
- Inspect DWO locations more frequently and document inspections to track the effectiveness of corrective action in eliminating the DWO

Solids and Floatables Control

Introduction

The purpose of this control is to minimize the discharge of visible solids and floatables from CSOs to surface waters. Many different types of control measures can be used, including structural controls such as screens, non-structural source controls like street sweeping, and treatment methods. The NPDES permit states:

"The discharge from CSOs shall not contain septage or holding tank waste or result in a visible oil sheen or in solid or floating materials in the receiving water."

The permit requires submittal of a report that addresses the alternatives for controlling solids and floatables. Specifically, the report needs to:

- "evaluate the procedures and technologies for controlling solid and floating material.
- describe the CSO controls presently in place for solids and floatables and submit a description of any additional controls which need to be installed or implemented.
- propose a schedule for the installation and/or implementation of the additional controls."

This section provides an overview of current practices. Future tasks of this project include evaluation of controls currently in place and recommendations for any changes.

Identification of In-Place Controls

The City of New Haven and WPCA have undertaken several activities which help to control solids and floatables in CSOs. Sewer separation, street sweeping, sewer flushing, catch-basin cleaning, and public education are among those activities. These activities are discussed in the following paragraphs.

Catch-Basin Cleaning

It is estimated by WPCA staff that there are 15,000 catch basins in the New Haven sewerage system (including both separate and combined systems). The goal of the program is for crews to visit 2,500 to 3,000 basins per year, with some return visits for trouble spots (for example, at the bottom of a hill where sand used for road traction tends to collect). Thus, all catch basins should be cleaned on a 5- to 6-year cycle. Figure 16 shows a portion of a map used to track which catch basins have been cleaned in a given year. As crews clean basins around the city, they note the location on the map with a triangle. There are plans to include this maintenance activity in a database at a later date to keep track electronically of the cleaning program.

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Until mid-1994, only emergency maintenance was performed on the catch basins. The current program includes about 40 percent emergency and 60 percent preventative maintenance, which is approaching the goal of 30 percent emergency and 70 percent maintenance.

The solids removed from a basin vary from sand, grit, leaves, and roots, to toilets and electric motors, depending on location in the city. A conservative estimate of the amount of waste that was prevented from entering the surface waters around New Haven in the 3 year period from July 1994 to July 1997 is approximately 369,000 ft³, which is equivalent to a football field over 8 feet deep (telephone interview with Bill Idarola, the O&M Manager for the WPCA).

Sewer Separation

The city has been undertaking a program of sewer separation since the late 1980s. At present, approximately 35 percent of the combined sewer area has been separated. Sewer separation aids in controlling solids and floatables of sanitary origin by decreasing the inflow to the combined sewers, reducing the volume, frequency, and duration of overflows from combined sewers and associated loads to receiving waters. However, water quality studies of stormwater have indicated that stormwater has relatively high and sometimes higher total suspended solids and bacteria loadings (see Appendix F). For this reason, plans for sewer separation are often limited to small and undeveloped areas.

NPDES Phase I stormwater regulations required communities with populations of over 100,000 served by separated sewers to provide treatment for stormwater discharged to receiving waters. The NPDES Phase II stormwater regulations, which are currently under review and are due to become effective in March 1999, include requirements for treatment of stormwater in urbanized communities with populations over 50,000. The City of New Haven is specifically listed as a community subject to NPDES Phase II regulations. To date, a December 22, 1997 correspondence from the CTDEP Office of Long Island Sound Programs to the City of New Haven was received regarding a permit application for the construction of storm sewers in a coastal area. The letter recommends adding stormwater treatment facilities. The requested controls are "to remove 80% of the annual total suspended solids (TSS) loadings or reduce post-development loadings of TSS so that average annual loadings are no greater than pre-development levels."

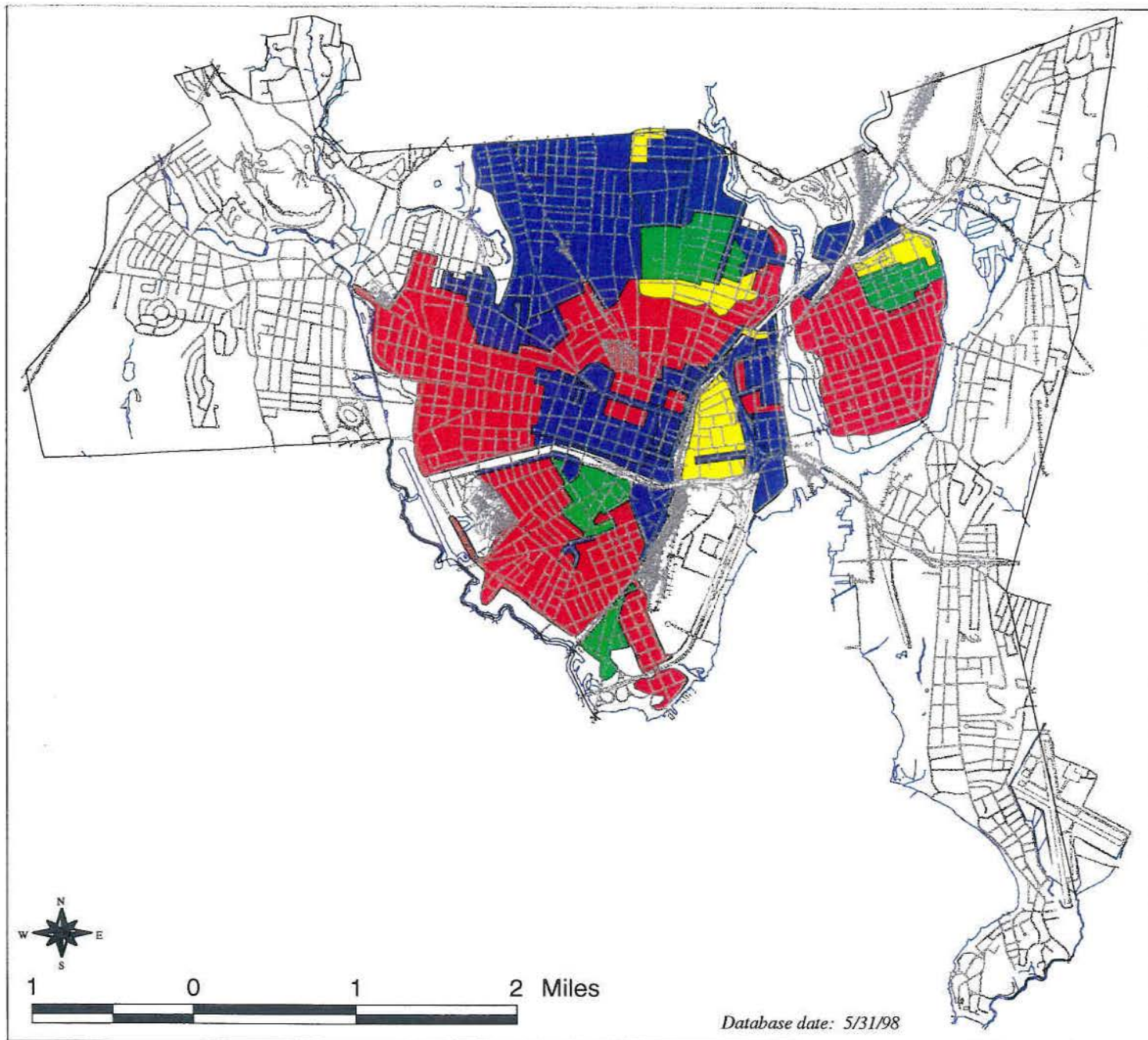
A status of the on-going sewer separation program is shown on Figure 17. The Long-Term CSO Control Plan being developed as part of this project will review the current status of the sewer separation projects underway to determine the most cost-effective approach to improving water quality in the New Haven area with respect to recent changes in and prospective new regulations which address both CSO and stormwater discharges.

Sewer Flushing

Flushing of the sanitary and the combined sewer collection system is scheduled with a goal of cleaning the entire system approximately every 5 years in accordance with standard collection system O&M practices. The collection system is flushed by WPCA crews as well as outside contractors. This program is discussed under the Operations and Maintenance section of the report.

Street Sweeping

The City of New Haven Department of Public Works (DPW) manages the street sweeping program. The current program schedules all streets within the City of New Haven to be swept by mechanical sweepers at least once monthly. Some streets (for example, downtown)



- City Limits
- Drainage
- Base Map
- Railroads
- Pathways
- Streets
- Sewer Separation Status
 - Completed
 - Design Complete
 - Under Design
 - Combined
 - Originally Built As Separated



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Figure 17
Sewer Separation
Program Status

are swept at least twice per month. The sweeping season is usually between April and November, but if the weather permits streets may also be swept during the winter. Parking regulations exist to keep streets accessible for sweeping during scheduled times. The fleet includes six sweeper trucks to be used by about 8 operators. DPW records indicated that approximately 1,240 tons of material were collected through street sweeping in 1997 (i.e., the amount of solid and floatable material that did not reach surface waters as a result of this program).

The Long Island Sound Campaign collected information on the New Haven street sweeping program and wrote the following in a summary:

“Officials state that street sweeping is performed once or twice a week, although citizens assert this happens only two or three times a year.”

There is a difference in perceived performance that needs attention (potentially program correction and/or public education/notification).

Public Education

Providing information to the public about the impacts of their activities on receiving waters can often be helpful in reducing solids and floatables. Several programs that address this goal (whether directly or indirectly) are discussed in the next section on pollution prevention.

Evaluation of Solid and Floatable Control Alternatives

Future tasks of this project include evaluation of solid and floatable controls as part of the development of the Long-Term CSO Control Plan. This section provides an overview of controls currently in place and, where possible, and indication of the effectiveness. The Long-Term CSO Control Plan will consider cost-effectiveness, technological-effectiveness, environmental impacts, permitting, implementation, and public acceptance.

Issues for Consideration

In this report, issues will be identified that may ultimately become part of the New Haven Long-Term CSO Control Plan; however, a complete evaluation and action plan with recommendations, including prioritization, schedule, and budget, cannot fully be developed until Tasks 5 and 6 have been completed. Therefore, in the interim, the following issues for consideration are offered regarding solid and floatable controls until a Long-Term CSO Control Plan is fully developed:

- Setup and develop a procedure to track the catch basin cleaning program using the GIS database
- Coordinate the locations and progress of the catch basin cleaning, street cleaning, and sewer flushing programs. Evaluate how they relate to sediment deposition in the sewers
- Establish a formal agreement between the City of New Haven and the WPCA for catch basin cleaning in order to clearly define roles and responsibilities

Pollution Prevention

Introduction

The goal of this control is to prevent the introduction of contaminants into the sewer system, and ultimately the receiving waters. Two items in the NPDES permit are addressed here. The first requires reduction of excessive infiltration and inflow to the system. The second compels the permittee to revise its existing Sewer Use Ordinance to include clauses prohibiting the construction of new combined sewers and the addition of any new sources of inflow to the existing system.

This section highlights various programs in New Haven that exist to prevent pollution, including information on the following:

- Significant sources of infiltration and inflow (I/I) and costs of associated I/I reduction projects
- Flow and pollution source control measures
- Mechanisms to promote water conservation
- Stormwater best-management practices (BMPs)
- Public education programs

Infiltration and Inflow (I/I)

The NPDES permit requires reduction of excessive I/I. Studies were undertaken in the 1970s to address this issue in each of the three sewersheds—Boulevard, East Street, and East Shore—when there were still three treatment plants in New Haven. The results of these studies are presented below, along with a discussion of some of the present concerns about I/I.

Sewershed Analyses

The *Report to City of New Haven, Connecticut on Infiltration/Inflow in the Boulevard Watershed* (Metcalf and Eddy) and the *Infiltration/Inflow Study, Phase I—Analysis* for the East Street Sewerage Collection System (CE Maguire) were completed in 1974. The latter report was updated in 1979 but the title remained unchanged. The report for the East Shore Watershed, *Infiltration/Inflow Analysis for East Shore Water Pollution Abatement Project* (Camp Dresser & McKee), was prepared in 1975.

The Boulevard Watershed Study concluded that infiltration in the Boulevard Watershed (including parts of Hamden and Woodbridge) was approximately 6.2 mgd in 1974. It was estimated that 60 percent of the watershed was served by combined sewers at the time of the study. Inflow into the separate sanitary sewers (about 2.6 mgd) during a rainfall of moderate intensity was assumed to be insignificant compared to that into the combined sewers, and was assumed to have no impact on the peak flow at the treatment plant. The report indicates that an inflow analysis for the combined sewers was not performed because proposed plans

for the Boulevard Treatment Plant included continuing use of the combined sewers and overflows, and the analysis was not practical. The report estimated that rehabilitation could eliminate up to 3.9 mgd of infiltration for the design year 2010 at a cost of \$1,297,000. However, it was estimated that such a program would allow a cost savings of only \$626,000 by reducing the capacity of the treatment plant. Similar (though less disparate) results were predicted for removal of the 3.9 mgd of infiltration plus the 2.6 mgd of inflow to the sanitary sewers. Therefore, it was determined that it would not be cost-effective to rehabilitate sewers to prevent infiltration and inflow in the Boulevard Watershed.

The East Shore Watershed Study was performed in 1975. The report concluded that infiltration was about 4.5 mgd in the East Shore Watershed, which included parts of Hamden and East Haven (the value excluded Fair Haven, where monitoring attempts were abandoned due to backwater problems). Out of 2.5 mgd of I/I that required treatment, it was estimated that only 1.0 mgd could be addressed by rehabilitation. The estimated costs for treating all the flow, and for 50 percent rehabilitation plus treating the remainder, were approximately \$326,000 and \$560,000, respectively. For 80 percent rehabilitation plus treating the remainder, the cost was estimated to increase to about \$869,000. Therefore, the study concluded that the infiltration and inflow could not be removed cost-effectively.

The East Street Watershed Study concluded that infiltration and inflow were problematic in the East Street Watershed. The 1974 analysis was updated in 1979 when it was decided that the three treatment plants should be consolidated to the present-day East Shore WPAF and that the design for the new East Shore plant required a reassessment of the 1974 analysis. In the 1979 study, it was estimated that 30 percent of the 7.5 mgd infiltration could be removed cost-effectively at a total (1979) present-worth cost of \$86.1 million, representing a cost savings of \$351,000. The report indicates that no cost analysis was performed for the prevention of inflow because it was to be addressed shortly by sewer separation. No work has been done to reduce the infiltration in this watershed to date.

The following section discusses present-day sources of infiltration and inflow that are being examined during the course of developing the Long-Term CSO Control Plan.

Present Sources of I/I under Investigation

I/I in the New Haven sanitary/combined sewer system include the following significant sources that are discussed below:

- Tidal inflow
- Groundwater infiltration
- Roof leaders
- Stormwater system cross-connections to sanitary/combined sewers

Estimated I/I Based on Recent Monitoring Data

To obtain an idea of the magnitude of infiltration and inflow in New Haven, recent data from three different periods in 1997 were examined and compared. These periods included:

- DRY. A dry period from September 22-26, without rain or high tides and during a season of the year when infiltration is typically very low.
- DRY WITH TIDES. A dry period from April 5-8, without rain but encompassing full moon tides and during a season when groundwater infiltration is typically high.

- **WET WITH TIDES.** A wet period from May 3-4, during a storm of approximately 0.86", at a time including full moon tides, and during a season when higher infiltration rates typically occur.

Flow data from the East Shore Water Pollution Abatement Facility and from twelve meters installed along New Haven's boundaries—which measure flows from Woodbridge, Hamden, and East Haven—were obtained for these periods. In addition, the approximate average amount of water consumed by New Haven's residents, commercial establishments, and industries was obtained from the Regional Water Authority. The majority of the water is conveyed to the WPAF. Some of this water is not discharged into the sewer system (e.g., that used in watering lawns) and was not included in this overview. By comparing the data, an estimate of the amount of infiltration and inflow during these periods could be computed. presents the flow values. It can be seen from Table 6 that the I/I component in New Haven is quite variable and can be substantial, ranging from 3.3 mgd during the drier dry period to 9.6 mgd during a wetter dry period to 26.9 mgd (including expected direct runoff) in very wet conditions. It is worth noting that the flow contributed by the neighboring communities is also variable, ranging from 10.6 to 16.9 to 18.3 mgd in drier dry, wetter dry, and wet periods, respectively. These values are not intended to be accurate measures of infiltration and inflow in New Haven; however, they provide enough information to show that there is substantial I/I influence in New Haven.

It is the WPCA's understanding that the Town of Hamden completed an I/I study of their system sometime during 1992 or 1993. The WPCA has not seen a copy of that report. The Town of Woodbridge recently completed an I/I study and will be proceeding with rehabilitation work this year. Also, the Town of East Haven recently notified the WPCA that it has retained an engineering consultant to conduct an I/I study.

Tidal Inflow

Cardinal's 1981 Facility Plan indicates that before 1975, approximately 2 mgd of tide water flowed into the sewerage system, and that since then (that is, up to 1981), the problematic overflow structure(s) have been eliminated. Flow monitoring data from 1997 suggest that there are outfalls that have tidal influence, and that tidal inflow may still be a problem. These outfalls are described individually below.

- NPDES # 015 (James St. siphon): the outfall discharges to the Quinnipiac River. The overflow weir (elevation 2.8 feet) is below mean high tide level (3.3 feet); the outfall has a flap gate which was examined and found to be in fair condition. Influence is most noticeable at spring tides. In December of 1997 the WPCA had this tide gate inspected and cleaned, and it is now in good condition.
- NPDES # 016 (Poplar St/River St): the outfall discharges to the Quinnipiac River slightly upstream of # 015. There is strong tidal influence observed in the overflow pipe with every tide (twice daily). The outfall has a flap gate which was in fair condition and able to swing freely. The overflow weir is approximately 540 feet from the river and is 0.5 feet above mean high tide level. The WPCA is planning on having this tide gate inspected and cleaned in the late spring of 1998.

NPDES # 019 (Pine St/N. Front St): the sewer discharges to the Quinnipiac River. The outfall pipe is at approximately 5 percent grade and without a tide gate. Tidal influence of the overflow pipe is suspected during spring tides. The invert of the overflow pipe at the interceptor is believed to be at elevation 6.5 feet—well above the mean high tide level of 3.3 feet. However, the meter which indicated probable tidal influence was located in the pipe at

Table 6. Estimated I/I Based on Recent Monitoring Data

	Q (mgd)			Data Source
	Dry ¹ (Sept)	Dry w/tides ² (Apr)	Wet w/tides ³ (May)	
Woodbridge, Hamden, East Haven	10.6	16.9	18.3	ADS ⁴
New Haven water consumption	15.6	15.6	15.6	RWA ⁵
New Haven infiltration and inflow	3.3	9.6	26.9	subtraction ⁶
East Shore WPAF	29.5	42.1	60.8	WPCA ⁷

¹ DRY - September 22-26, 1997. No rain, no full moon tides, low groundwater infiltration (fall).

² DRY w/TIDES - April 5-8, 1997. No rain, full moon tides, high groundwater infiltration (spring).

³ WET w/TIDES - May 3-4, 1997. During a 0.86" storm, full moon tides, and high groundwater infiltration (spring).

⁴ ADS, 1997. Data from permanent meters along New Haven Boundaries.

⁵ Regional Water Authority. Water Consumption Database. Average annual consumption rates for 1996.

⁶ Computed as follows: I/I = WPCA - (ADS + RWA).

⁷ WPCA, 1997. Hourly flow records for WPAF effluent.

elevation 4.8 feet, 1.5 feet above mean high tide. Presently, sewer separation and reconstruction plans are scheduled to be developed for this area to reduce tidal influence unless this project identifies other alternatives.

- NPDES # 021 (East Street Pump Station): this outfall serves as a bypass for the East Street Pump Station to the New Haven Harbor. The outfall has a flex valve in good condition; however, some tidal influence at spring tide was noticed. Due to the good condition of the duckbill, it appears that the tidal inflow is not occurring from the outfall but rather is coming from an upstream source. WPCA records staff presently believes that the significant tidal inflow at the Union pump station is responsible for the cyclical influence on flows at the East Street pump station; however, this is still under investigation.
- NPDES # 025 (Union pump station): although the twin outfalls on the New Haven Harbor are nearly 0.8 mile from the regulator, tidal influence during spring tides is suspected. Because of the configuration of the regulator chamber, the flow observed with the meter very likely entered the combined sewer system and was conveyed to the WPAF for treatment. Neither of the outfalls had a tide gate when inspection was done. The 1979 East Street I/I study indicated that tidal influence has been a problem at this regulator and outfall in the past. The WPCA indicates that a flex valve is to be installed at this location under a planned CSO project (Kimberly/Columbus South) that will be bid in late 1998, with construction beginning in either late 1998 or early 1999.

WPCA staff indicated the following areas, shown on Figure 18, have suspected groundwater infiltration and need further investigation:

- Morris Cove – Douglass Street and Myron Street
- Quinnipiac Avenue – near pump station and Essex Street; near a railroad; pipe in a swamp
- Terrace Street
- Pope Street
- Morse Place
- Woodward Avenue – near pump station and Fort Hale
- Kneeland Road (near Morris Cove) – pipe was installed in rock

Roof Leaders

The method of sewer separation in New Haven involves construction of new storm sewers and use of the formerly combined sewers as sanitary sewer lines. The 1981 Facility Plan included complete sewer separation for the entire city, disconnection of roof leaders from the combined sewers, and reconnection of roof leaders to new storm sewers.

Reimbursement by the city and WPCA for separation of roof leaders is dictated by the Sewer Use Ordinance. Building owners must complete roof leader separation within 18 months of notification by the city engineer. Reimbursement depends on the roof area: for less than 2,500 ft², remuneration is \$250 or 50 percent of actual cost, whichever is more, not to exceed \$1000; for greater than 2,500 ft², reimbursement is 50 percent of actual cost or \$0.40 per square foot of roof area, whichever is less.

Cardinal Engineering Associates developed cost estimates for disconnecting and reconnecting roof leaders in their 1988 *Update and Supplement to Facility Plan for Elimination of Combined Sewer Overflows*. For external roof leaders that do not require reconnection (i.e., flow is redirected for infiltration or overland flow to storm sewer drains), the cost was estimated to



- Areas with Infiltration
- △ Streets
- City Boundaries

Figure 18
Areas with Suspected
Groundwater Infiltration

be only \$200 per dwelling. If reconnection to a storm sewer is required, the cost was estimated to increase to \$2,000 per dwelling. The report estimated that there were 13,600 buildings with roof area less than 2,500 ft². An average cost of \$700 per site was assumed, with a resultant cost of \$9,520,000. For buildings with roof area greater than 2,500 ft², a range of roof areas was distributed among 500 buildings for a maximum cost estimate of \$1,985,000, bringing the total cost estimate to \$11,505,000. Some of the separation projects have provided pipe stubs for future connection of laterals conveying stormwater.

As sewer separation has progressed, individual projects have implemented differing degrees of separation. As a result, during storms some sanitary sewers receive inflow from roof leaders on commercial and residential buildings. There are some areas in the sewer system which are prone to sedimentation—in many cases, due to separation, the pipes are too large for the dry-weather flows they convey—and which benefit from inflow. A hydraulic model developed under this contract will aid in identifying critical areas to be targeted for roof leader disconnection by analyzing flow velocities required for scouring the large pipes.

Stormwater System Cross-Connections to Sanitary/Combined Sewers

Recent flow monitoring data from an area of the city in which sewers were originally constructed as separate storm and sanitary systems, suggest that sanitary sewers are receiving inflow during storms. During the monitoring period in late 1997, meters located in the Westville area on Lowin Avenue, Anthony Street, and Chapel Street all showed impacts to the sanitary sewers during storm events—at Anthony Street, discharge was increased to over four times the average daily flow for two different storms. Verification of potential cross-connections identified during sewer system mapping and computer model development is in progress as part of CH2M HILL's present study. WPCA records staff believes the source of stormwater entering the sanitary system on Lowin Avenue is due to infiltration because the pipes were built on a reclaimed waterbody, and the pipes are settling and cracking. Potential sources of stormwater entering the sanitary system on Anthony and Chapel Streets are currently being investigated by WPCA and consultant staff.

Revisions to the Sewer Use Ordinance

The current NPDES permit requires certain revisions to be made to the Sewer Use Ordinance. The pertinent excerpt of the permit is presented below:

NPDES Permit, § 5.B.9, states:

“Within 730 days [September 30, 1996] of the issuance of this permit [September 30, 1994], the permittee shall revise its existing Sewer Use Ordinance, required under Section 12 of this permit to incorporate the following provisions:

- (a) prohibit the construction of new combined sewers except in cases where repair or replacement of the existing system is approved in writing by the Commissioner, and
- (b) prohibit the introduction of new inflow sources to the existing system.

The revised ordinance shall be submitted to the Department for verification, review and approval.”

A letter was submitted to the DEP in September 1996 requesting an extension until December 31, 1997 so that further changes could be incorporated into the new ordinance. An additional letter dated December 18, 1997, requested an extension to 1,460 days from the issuance of the permit (9/30/94), which indicates a deadline of September 30, 1998.

Control Measures

Catch Basins

Implementation of the catch-basin cleaning program can impact pollutant loads, as cleaner catch basins have more capacity to trap solids. The program for cleaning catch basins was described in the previous section (Solids and Floatables Control).

Hazardous Waste

A center for public disposal of hazardous wastes is run by the local Regional Water Authority on Saturdays from May through October each year. A water bill insert describing the program is sent to all water customers on an annual basis. The center receives the following types of waste:

- **Kitchen and Bathroom:** Aerosol cans, bug sprays, metal polish, floor care products, furniture polish, oven cleaners, drain cleaners, bathroom cleaners, tile cleaners, disinfectants, medicines, nail polish remover
- **Garage and Workshop:** Antifreeze, gasoline, auto batteries, brake fluid, other oil/cleaners, oil based paint, paint thinner, paint stripper, varnish, waste oil
- **Garden and Miscellaneous:** Chemical fertilizers, fungicides, insecticides, rat poison, artists' paints and mediums, dry cleaning solvents, fiberglass, epoxy, gun cleaning solvents, moth balls, batteries, photographic chemicals, swimming pool chemicals, small camp stove and propane cylinders

Materials received at the center are packed into drums of similar wastes. When full, the drums are transported to federally-approved disposal sites: some are incinerated, some are put into landfills, some are recycled or reused.

The center is available for residents of 17 towns to use free of charge. Volunteers from the various communities help run the center—without handling the wastes directly—on assigned town days a couple times per season.

During 1996, the center accepted 59,000 gallons of hazardous waste from over 5,000 households. Since 1990, more than 250,000 gallons of waste have been collected.

Solid Waste and Recycling

In New Haven, curbside refuse collection occurs on a weekly basis. There are approximately 8 routes per day, using about 16 trucks. In the year 1997, an estimated 72,450 tons of refuse were collected. The refuse was about 65 percent municipal and 35 percent commercial. Refuse in public places is collected on a nightly basis by a crew of 2 people.

Recyclables including bottles, cans, plastic, newspaper, and cardboard are collected on the same day as refuse, once per week. Leaves bagged in recyclable material can also be recycled on a seasonal basis. There are about 4 routes per day for recycling, and the fleet includes 6

trucks for this purpose. According to DPW records, approximately 1,600 tons of bottles, cans, and plastic; 2,300 tons of newspaper and cardboard; 375 tons of mixed paper; 410 tons of leaves; and 55 tons of trees were collected in 1997. A crew of about 40 people are employed to collect solid wastes and recyclables.

The Long Island Sound Campaign indicated that New Haven also has a pooper scooper law; although no information on effectiveness of the law or enforcement issues was noted.

Bulk Trash Removal

The city removes bulk trash on request by appointment. An estimate based on DPW records for the latter half of 1997 indicated that about 1,460 tons had been collected.

Construction Debris

The city operates a transfer center which is currently not permitted by the DEP to accept construction debris. However, the city plans to try to include this capability in their next permit. The current permit will be renewed during March 1998.

Street Sweeping

Street sweeping can help prevent solids and floatables from entering catch basins and sewers through consistent maintenance. The street sweeping program in New Haven was discussed in the previous section (Solids and Floatables Control).

Erosion Control

The City of New Haven adheres to the Connecticut Soil Erosion and Sediment Control Act for guidelines. Under certain circumstances (for instance, for development of a site greater than 0.5 acre), a Soil Erosion and Sediment Control Plan must be developed and submitted.

Mechanisms to Promote Water Conservation

Education and tools for water conservation are provided by the South Central Connecticut Regional Water Authority (RWA) which adheres to a lengthy and detailed water conservation plan. Highlights of the plan affecting water usage include the following:

- Meters have been employed to determine customer use for the entire system since the mid-1980s. This method of collecting data for billing purposes also discourages excessive use of the resource. In addition, the Authority's meter testing program demonstrates conservation by recycling approximately 7,500 gallons per day (about 0.01 percent of the annual average daily demand of 55 mgd—or, from a different perspective, about 57 times the estimated average per-capita daily demand of 131 gpd).
- Water saving kits and assistance are provided, upon request, free of charge to residential and commercial customers. Several water use audits have been conducted for industrial users as part of an ongoing program, also without charge to the customer.
- Public education programs include annual bill inserts on water conservation (examples include "Water Conservation through Creative Landscaping, XERISCAPE" and "Time to Do a Leak Patrol"), tips for conservation written on bills, workshops for teachers and classes for students through the Whitney Water Center, school curricula, a speakers bureau with educational programs and videos, a "Water Conservation Handbook" that is

available upon request, and a website (<http://www.rwater.com>) that offers information on topics of interest as well as contact information. In addition, employees of the RWA are available to respond to questions about water conservation through phone, and soon, electronic mail communications.

Stormwater BMPs

Aside from the programs already presented no other stormwater BMPs, such as stormwater detention basins, are known to exist in New Haven at this time. As previously discussed under the Sewer Separation heading in the preceding section of this report, the CTDEP Office of Long Island Sound Programs has recently begun recommending that stormwater treatment facilities be included in the design and construction of storm sewers in coastal areas. NPDES Phase II stormwater regulations, expected in March of 1999, include the City of New Haven as a community subject to new regulations requiring treatment of stormwater in urbanized communities with populations over 50,000. Therefore, application of stormwater BMPs will be reviewed in future project documentation as part of the development of the Long-Term CSO Control Plan for the City of New Haven.

Public Education Programs

The following paragraphs describe, by responsible organization, some of the programs that abound in the New Haven area and throughout Connecticut for educating youth and adults about the environment and prevention of pollution. As part of this project, a web site with limited access and a newsletter with limited distribution have been developed summarizing project activities.

WPCA Programs

The WPCA actively promotes environmental awareness, public education, and pollution prevention through its various programs, which include catch basin stenciling and the "Youth and the Environment" program. These programs are described in the following paragraphs.

Catch-Basin Stenciling

This project, begun during the summer of 1997, will continue during summers while the funding lasts with the aim of stenciling at least 2,000 catch basins in the city. It includes the creation and maintenance of a database containing information about storm sewers and catch basins. Science teachers in middle schools will receive information packages, and students will participate in identifying catch basins throughout the city and examining them for symptoms of illegal dumping or malfunction. In conjunction with this project, an insert was sent with water bills to Regional Water Authority customers in the New Haven area. The insert describes the path that pollution takes through storm drains into Long Island Sound and provides tips for preventing pollution to the Sound. The insert was sponsored by the WPCA, U.S. Environmental Protection Agency Region I, Regional Workforce Development Board, New Haven Public Schools Career Development Office, South Central Connecticut Regional Water Authority, and Connecticut Sea Grant.

"Youth and the Environment" Program

Since 1993, the WPCA has offered the "Youth and the Environment" program to employ and educate youths. This exemplary program and its director, Thaddeus Fura, Jr., were

recognized in 1996 through an award from the U.S. Department of Labor's Employment and Training Administration. The goal of the program is to provide hands-on experience and education that is not only valuable to the students, but also through them helps to create environmental awareness throughout the community. Students learn what is required to run a wastewater treatment facility on a daily basis, and they are exposed through lectures and field trips to other environmental fields such as water treatment, marine biology, and process optimization through recycling in industrial plants. The program has been sponsored by the WPCA, U.S. EPA, the New England Interstate Water Pollution Control Commission, the City of New Haven, the New Haven Board of Education, the Sound School, and the New Haven Private Industry Council/Regional Workforce Development Board at various points along the way.

New Haven School District Program

The New Haven School District is planning a series of projects that will involve two high schools, one middle school, and two elementary schools in community service activities. Among them is stenciling at least 600 storm drains over a period of three years with the message "Warning: Do Not Dispose of Hazardous Waste in Storm Drains." In addition, there will be a segment called "Pollution Control Activities," that will examine pollution problems in the community that impact New Haven's recycling program and will potentially include other pollution control activities as well. The project is funded by a "Learn and Serve America" Grant. The Water Pollution Control Authority, Eli Whitney Museum, and the Regional Water Authority are expected to provide expertise.

Parks Department of the City of New Haven Programs

The Parks Department of the City of New Haven offers several programs free of charge to city residents and schools as described below.

"Touch" Tank

The most popular program is offered at Lighthouse Park, where there is a "touch" tank in which students can handle various forms of marine life. Many school classes participate in this program throughout the spring and fall. The program includes discussions of creatures found in marine environments and tidal pools, and the effects of pollution and litter on these locales.

Water Quality Testing

Another successful program involves water quality testing. Using simple water quality kits, students are able to assess water quality from a vantage point on the river, in a canoe, where they can witness impacts of pollution on water bodies. Students learn about the concepts of watersheds, the hydrologic cycle, wetlands, and how storm drains and wastes are connected to the system.

Agricultural Experiment Station

The Agricultural Experiment Station has recreation programs that teach youths how to fish and crab. An important facet of the program revolves around how pollution affects marine life and examines toxicity in fish.

Other Programs and Goals

In addition, many volunteer cleanups have been organized to clean riverbanks.

The Parks Department's long-range plan also includes stenciling of storm drains.

Regional Water Authority

The Regional Water Authority has developed many programs that can be tailored to students of different ages. Among the current programs is one that examines the impacts of pollution on water.

Connecticut DEP

The Connecticut DEP continues to provide a wealth of information, technical assistance, and training programs to the public, teachers, businesses, and institutions of the state. Pollution prevention is one of the primary initiatives targeted by the Commissioner. Projects include providing pollution prevention training to small businesses, providing technical assistance to specific industries, educating and enabling marina and boat owners to operate more cleanly, and developing plans for prevention of coastal non-point source pollution. The DEP also provides fact sheets on a number of different pollutants.

New Haven County Soil and Water Conservation District

The New Haven County Soil and Water Conservation District provides information, education, and technical assistance to private landowners, businesses, and farmers in the county. Educational opportunities created for students include "Outdoor Living Classrooms"—the goal is to have one classroom in each of the 27 towns in the district, and 5 are already available for use.

University of Connecticut

The Non-point Education for Municipal Officials (NEMO) project associated with the University of Connecticut uses a geographic information system (GIS) to "teach local officials about the sources and impacts of non-point source pollution, how different land uses affect water quality, and what towns can do to protect water quality." The project is in its fifth year and is continuing to receive requests for presentations throughout the state.

Resources Required for Pollution Prevention Activities

Budgets, staff, and equipment for the programs presented above were provided where the information was available. Many of the public education programs receive grants/volunteers.

The Long Island Sound Fund License Plate Program is ongoing and represents a potential funding source to the City of New Haven as future pollution prevention and public education measures are considered. The Long Island Sound Fund, which results from the sale of Long Island Sound license plates, is administered by the DEP. The Fund is available to support activities including public access, public education and outreach, habitat restoration, and research. Recommendations for programs to receive grants are made to the DEP by an advisory committee. For the past several years, approximately \$500,000 has been awarded annually throughout the State. Projects funded in the New Haven area have included:

- Storm drain stenciling (e.g. "Don't Dump, Drains to Long Island Sound")
- Education for fifth graders about wetlands
- Collection by sixth through ninth graders and dissemination through schools, community centers, and adult seminars, of information about ecosystems related to Long Island Sound
- Development of environmental workshops and presentation of information about the Long Island Sound
- A one-day symposium providing an evaluation of the West River Watershed

Issues for Consideration

In this report, issues will be identified that may ultimately become part of the New Haven Long-Term CSO Control Plan; however, a complete evaluation and action plan with recommendations, including prioritization, schedule, and budget, cannot fully be developed until Tasks 5 and 6 have been completed. Therefore, in the interim, the following issues for consideration are offered regarding pollution prevention programs until a Long-Term CSO Control Plan is fully developed:

- Investigate significant point sources of I/I and re-evaluate the cost-effectiveness of removing the I/I. Progress towards identification of significant point sources of I/I will be performed as part of this study.
- Modify the Sewer Use Ordinance to reflect the language and intent required by the NPDES permit
- Perform a cost-benefit analysis of present pollution prevention control measures to prioritize funding of programs
- Develop a stormwater utility to fund stormwater BMPs presently being required by CTDEP and storm sewer system O&M
- Review existing public education programs for coordination of limited resources
- Consider providing access to a project web site and distributing the newsletter to a wider audience
- Review available I/I study information from the interlocal towns

Public Notification

Introduction

CSO discharges contaminate surface waters which are widely used for a variety of recreational and commercial purposes. Public notification of CSO outfall locations, dry weather overflow occurrences, and possible adverse health and environmental effects of CSOs is therefore very important. The intent of public notification is to reduce the exposure of the general public to potential health risks. The NPDES permit is very specific about public notification requirements. The following excerpts from the permit provide detail.

“... the permittee shall install and at all times thereafter maintain identification signs for all combined sewer outfall structures as required by the Commissioner. The signs shall be located at or near the combined sewer outfall structures so that they are easily readable by the public. These signs shall be a minimum of 12 x 18 inches in size, with white lettering against a green background, and shall contain the following information:

PERMITTEE'S NAME _____

WET WEATHER SEWAGE DISCHARGE OUTFALL.
(discharge serial number)

Anyone observing a discharge from this outfall during dry weather conditions should call and report it to the Permittee at _____, and to the Department of Environmental Protection at 566-3338.”

“The permittee shall develop and maintain a warning system for notification of downstream or adjacent water dependent users, who may be negatively impacted by combined sewer overflows... Upon approval by the Commissioner, the system shall be maintained in full effect at all times thereafter.”

This section describes the current program and evaluates options for public notification and the reporting and documentation needs associated with public notification.

Review of Existing Program

Posting of Signs at Outfall Locations

The City of New Haven has 24 permitted CSO regulators tributary to 20 CSO outfalls discharging to the Mill River, West River, Quinnipiac River, and New Haven Harbor. Three of these regulator locations and two of these corresponding outfall locations are closed. Table 7 presents an inventory of existing signs, recommendations for signs where none exist, and comments on sign locations. Note that many of the signs are presently

Table 7. Inventory of CSO Signs

NPDES Discharge #	Regulator Location	Receiving Water	Existing Signs		Recommended Signs		Comments
			Yes	No	Yes	No	
002	E.T. Grasso Blvd. @ Lamberton St.	West River		X	X		outfall located on private property
003	E.T. Grasso Blvd. @ Orange St.	West River	X				outfall located under bridge and not readily visible
004	E.T. Grasso Blvd. @ Legion St.	West River	X				outfall located under bridge and not readily visible
005	E.T. Grasso Blvd. @ Derby St.	West River	X				outfall located under bridge and not readily visible
006	Whalley Av. @ Fitch St.	West River		X	X		outfall located under bridge and not readily visible
007	Munson St. @ Canal St.	Bowen Field Lagoon	?	?		X	overflow pipe has been plugged
008	Munson St. @ Orchard St.	Bowen Field Lagoon	?	?	X		overflow pipe remains open after sewer separation
009	Grand Ave. @ James St.	Mill River	X				
010	East St. @ I-91	Mill River		X	X		one sign at common outfall for 010, 011, 014
011	Humphrey St. @ I-91	Mill River		X	X		one sign at common outfall for 010, 011, 014
014	Trumbull St. @ Orange St.	Mill River		X	X		one sign at common outfall for 010, 011, 014
012	Mitchell Dr. @ Nicoll St.	Mill River		X	X		outfall located under bridge and not readily visible
013	Everit @ East Rock Rd.	Mill River	X				outfall located under bridge and not readily visible
015	James St. Siphon	Quinnipiac River	X				
016	Poplar St. @ River St.	Quinnipiac River	X				
017	Grand Ave. @ Front St.	Quinnipiac River		X		X	outfall closed
018	Lombard St. @ N. Front St.	Quinnipiac River		X	X		
019	Pine St. @ North Front St.	Quinnipiac River		X	X		outfall located on private property
020	Quinnipiac @ Clifton St.	Quinnipiac River		X	X		outfall discharges stormwater, too
021	East St. Pump Station	New Haven Harbor		X	X		pump station is continuously monitored from WPAF
022	Allen Place	Drainage Swale	X				outfall located on private property
023	Franklin St. @ Water St.	New Haven Harbor		X		X	outfall closed
024	Boulevard Pump Station	New Haven Harbor	X				pump station is continuously monitored from WPAF
025	Union Pump Station	New Haven Harbor		X	X		

? = not investigated because sewer separation had been completed in the area

installed at the discharge locations noted in Appendix A of the NPDES Permit (i.e., regulator locations) rather than at the CSO outfall location adjacent to the receiving water. Regulator locations may be several city blocks away from the outfall locations and, therefore, do not adequately identify the location of the potential public health hazard. In a letter dated 10/23/96 from Mr. Thaddeus Fura/WPCA to Mr. Michael O'Brien/CTDEP, the WPCA requested several modifications to the permit requirements regarding posting signs. Because some of the signs have been repeatedly stolen, the WPCA has recommended to the CTDEP that they be allowed to place signs only at outfall locations which are visible and accessible to the public. Further, they suggested that placement of signs at CSO outfall locations on private property is not necessary. The WPCA has not received a response from CTDEP on how to proceed.

The signs are intended to notify the public of a potential public health hazard. People who access shorelines via public, or private land or water ways must be notified of CSO outfall locations by posting nearby the text required by the NPDES permit.

Public Notification Warning System

Presently, aside from the posting of signs, there are two warning systems to alert the public of CSOs: 1) the warning system used for notification of DWOs previously presented in that section of the report, and 2) the warning system described in the following paragraph resulting from water quality monitoring during the "swimming season" from late May to mid- September:

The Long Island Sound Campaign noted that there are approximately 1,000 linear feet of municipal beaches (out of about 27,000 linear feet of shoreline) with 30 public access points along Long Island Sound. There is only one swimming beach within the limits of the City of New Haven at Lighthouse Point.

Currently, water quality monitoring is performed by the City of New Haven Department of Health at the Lighthouse Point beach. This monitoring program is only active during the "Swimming Season," from the last week in May to the second week of September. Samples are collected once a week during high and low tide and always at the same locations. Sometimes samples are collected at Fort Blackrock where there is sunbathing. The main objective of this program is to determine the contamination levels of Enterococci bacteria in the water. Contamination levels are considered to be of alarming proportions and the beaches must be closed if the count of microorganisms exceeds 61 in any 100 ml sample, or if the average count for a given month exceeds 34 microorganisms.

According to the Health Department, poor water quality at the beaches is not considered to be a chronic problem. In 1997, there were no beach closings. In 1996 and 1995, the Department of Health reported "maybe" 1 and 2, respectively (per conversation with Paul Kowalski, Director, City of New Haven Department of Health). For the few beach closings noted, no correlation with rainstorms has been determined, and only one beach closing is suspected to have been caused by a CSO event. When it is determined that the beaches must be closed, signs are posted at bulletin boards throughout the beaches, and the local newspaper, the New Haven Register, is notified as well. Weekly reports of water quality monitoring for the Lighthouse Point beaches are filed with Dr. Paul Kowalski, Director of the Department of Health, and Mr. Brian Funk, Director of City Parks. These records are kept on file for a duration of 7 to 10 years.

Issues for Consideration

In this report, issues will be identified that may ultimately become part of the New Haven Long-Term CSO Control Plan; however, a complete evaluation and action plan with recommendations, including prioritization, schedule, and budget, cannot fully be developed until Tasks 5 and 6 have been completed. Therefore, in the interim, the following issues for consideration are offered regarding public notification activities until a Long-Term CSO Control Plan is fully developed: Post CSO notification signs (or consider stenciling) at CSO outfall locations to notify the public of potential CSO occurrences which may adversely impact public health. Note: two of the notification signs have incorrect NPDES #s (signs for NPDES #s 003 and 005 were inadvertently switched during installation) and should be corrected.

- Expand notification program to include various environmental and educational groups (see participants listed under the public education section of this report)
- Develop a public relations and media program to notify the public of the positive programs in place to reduce pollution to surface waters and adverse impacts to public health, and to provide notification of CSO events during dry and wet weather

References

- ADS Environmental Services, Inc., January 1998. City of New Haven Temporary Flow Monitoring Study, Final Report.
- CE Maguire, Inc., 1979. Infiltration/Inflow Study, Phase I - Analysis for the East Street Sewerage Collection System.
- Camp Dresser & McKee Inc., Apr 1975. Infiltration/Inflow Analysis for East Shore Water Pollution Abatement Project.
- Cardinal Engineering Associates, Inc., Feb 1981. Facility Plan, Sewage Collection System. Volume 1.
- CH2M HILL, June 1997. City of New Haven Long Term CSO Control Plan, Technical Memorandum #1, Project Goals and Approach.
- CH2M HILL, July 1997. City of New Haven Long Term CSO Control Plan, Technical Memorandum #2, Database Design and System Modeling Approach.
- CH2M HILL, October 1997. City of New Haven Long Term CSO Control Plan, Technical Memorandum #4, Monitoring Program Procedures and Data Management Plan.
- CH2M HILL, February 1998. City of New Haven Long Term CSO Control Plan, Geographical Information System Database.
- CH2M HILL, March 1998. City of New Haven Long Term CSO Control Plan, Technical Memorandum #5, Monitoring Program Results.
- CTDEP, 1994. State of Connecticut Department of Environmental Protection, NPDES Permit Modification, September 1994.
- Metcalf & Eddy, Inc., Nov 1974. Report to City of New Haven, Connecticut on Infiltration/Inflow in the Boulevard Watershed.
- United States Environmental Protection Agency (EPA), May 1995. Combined Sewer Overflows, Guidance for Nine Minimum Controls. EPA 832-B-95-003

Appendix A CSO Inspection Reports and Revised Form

NOTE: Inspections to be conducted only during dry weather conditions.

DATE 1-26-98 TIME 9¹² AM Temperature 28°F

Precipitation during preceding twenty-four hours? YES _____ NO X

Time of high tide in New Haven Harbor. 2¹² pm

Identification of Combined Sewer Overflow. Lombard + Front

Overflow Condition (check every item)

Overflow pipe visible	YES <u>✓</u>	NO _____	N/A _____
Discharge from overflow	YES _____	NO <u>✓</u>	N/A _____
Flow into overflow	YES _____	NO <u>✓</u>	N/A _____
Discoloration near overflow	YES _____	NO <u>✓</u>	N/A _____
Any debris, obstruction at overflow	YES _____	NO <u>✓</u>	N/A _____

Combined Sewer Condition Check List (check every item)

Sewer flowing more than half full	YES <u>✓</u>	NO _____
Sewer flowing less than half full	YES _____	NO <u>✓</u>
Sewer surcharged	YES _____	NO <u>✓</u>

Comments _____

1-26-98
DATE

R. Banz
INSPECTOR

DATE

WT
SUPERINTENDENT OF SEWERS

CC: Plant Superintendent - East Shore

WPCA-56

NOTE: Inspections to be conducted only during dry weather conditions.

DATE 1-26-98 TIME 845 A Temperature 28°F

Precipitation during preceding twenty-four hours? YES _____ NO X

Time of high tide in New Haven Harbor. 2¹⁰ pm

Identification of Combined Sewer Overflow. Poplar + River

Overflow Condition (check every item)

Overflow pipe visible	YES <u>✓</u>	NO _____	N/A _____
Discharge from overflow	YES <u>(✓)</u>	NO _____	N/A _____
Flow into overflow	YES _____	NO <u>(✓)</u>	N/A _____
Discoloration near overflow	YES _____	NO <u>(✓)</u>	N/A _____
Any debris, obstruction at overflow	YES _____	NO <u>(✓)</u>	N/A _____

Combined Sewer Condition Check List (check every item)

Sewer flowing more than half full	YES <u>✓</u>	NO _____
Sewer flowing less than half full	YES _____	NO <u>✓</u>
Sewer surcharged	YES _____	NO <u>✓</u>

Comments _____

<u>1-26-98</u>	<u>R. Baiz</u>	_____	<u>WPC</u>
DATE	INSPECTOR	DATE	SUPERINTENDENT OF SEWERS

CC: Plant Superintendent - East Shore

WPCA-56

NEW HAVEN - WATER POLLUTION CONTROL AUTHORITY

COMBINED SEWER OVERFLOW MONTHLY INSPECTION REPORT

NOTE: 1) INSPECTIONS TO BE CONDUCTED ONLY DURING DRY WEATHER CONDITIONS.
2) LOW TIDE IS BEST FOR MOST LOCATIONS.

DATE: _____ TIME: _____ TIME OF HIGH TIDE: _____

PRECIPITATION DURING PAST 24 HOURS YES _____ OR NO _____

CSO LOCATION _____

FINDINGS AT THIS LOCATION (check every item)

A.	Outfall to river inspected	YES _____	NO _____	N/A _____
	Any flow from outfall structure	YES _____	NO _____	N/A _____
	Discoloration/debris at outfall	YES _____	NO _____	N/A _____
B.	Overflow pipe/weir inspected	YES _____	NO _____	N/A _____
	Any flow into overflow (<i>Bypass</i>)	YES _____	NO _____	N/A _____
C.	Sewer flowing more than half-full	YES _____	NO _____	N/A _____
	Sewer surcharged at this time	YES _____	NO _____	N/A _____
	Signs of surcharge since last inspected	YES _____	NO _____	N/A _____

COMMENTS: _____

Inspector

Analyst

REVISED FORM

**Appendix B WPCA Non-Domestic Wastewater
Program: Sample Industrial Discharge
Questionnaire, Permit Application, Review
Form, Inspection Report, and Permit**

InspectorQUESTIONNAIRE FOR NEW INDUSTRY

- 1) Name of Industry: _____ Date _____
- 2) Address: _____
- 3) Telephone No. _____
- 4) Contact Person: _____
- 5) Type of Industry:
- a) Wet b) Dry c) Dry possibility of becoming wet in future.

If wet, industry answer the following:

- 6) Product manufactured or process performed.

- 7) Materials used: (Chemicals)

- 8) Is there a pretreatment system in operation? Yes _____ No _____

If yes what type:

- 9) Hazardous waste stored on site? Yes _____ No _____

- 10) Source of water used:

a) Water Company b) Private c) Other _____

Inspector Notes: _____

CITY OF NEW HAVEN
SEWER USE PROGRAMDISCHARGE REPORT AND APPLICATION
FOR
WET INDUSTRY PERMIT

(Conforming With Chapter 25 of the City of New Haven's Code of Ordinances)

The appropriate fee must be remitted with this application. Checks should be made payable to the Tax Collector - City of New Haven. The initial laboratory analysis is to be paid by the applicant. Please submit all available supporting data (engineering reports, lab tests, etc.). Please print in ink, or type.

Please print in ink, or type.

(1) Name of Company _____

Service Address _____ Zip Code _____

Billing Address _____ Zip Code _____

Phone _____

New Haven Water Co. Account Nos. _____

Application By _____ (Name) _____ (Title)

(2) Raw Materials Used _____

(3) Company Products (By type, amount, and rate of production):

(4) Business Operations:

No. Employees _____
Day Shift _____ 2nd Shift _____ 3rd Shift _____ Total _____

Hours per Day _____ Days per Week _____

(5) Source and Quantity of Water Used (gallons per day).

Source	Metered		Water Compliance	
	Yes	No	Average	Maximum
New Haven Water Co.	_____	_____	_____	_____
Private Well	_____	_____	_____	_____
Other	_____	_____	_____	_____

2

City of New Haven - Sewer Use Program

- (7) Volume of wastewater to be discharged to the sewerage system on a typical operating day:

Type	Discharge (Gallons/Day)	
	Average	Maximum
Process		
Domestic		
Cooling		
Total		
Continuous		(Choose One)
Intermittent		

- (8) Pretreatment Now Installed;

Volume of Grease Trap

Water Volume of Settling Tank

Other Processess (Describe)

- (9) Characteristics of raw liquid waste: COMPANY SHALL TEST WASTEWATER AS FOLLOWS:

CERTIFICATION: By responsible officer of the laboratory performing the analysis.

I hereby certify that the analysis results indicated in Item No. 9, above, have been made under my direction and that it is a true and correct analysis.

By _____

Firm _____

City of New Haven - Sewer Use Program

3

THE STATE OF

COUNTY OF

BEFORE ME, the undersigned authority, on this day personally appeared _____, known to me to be the person whose name is subscribed to the foregoing certification, and acknowledged to me that the information contained therein is true and correct.

GIVEN under my hand and seal of office, this the _____ day of _____, 19_____.

Notary Public
in and for _____ County

- 10) List the chemical components and quantity of liquid or gaseous materials stored on-site (even though they may not normally be discharged into the sewerage system.)
- _____

- 11) Attach to this application a plan showing the location and size of on-site sewers, sampling point, pretreatment facilities and City sewerage system.

Applicant _____
(Company Name)

Date: _____ By _____
(Signature of person making application)

Amount Remitted \$ _____

Make check payable to "WPCA-SEWER FUND - CITY OF NEW HAVEN"

Return to:

City Engineer
City of New Haven
200 Orange Street
New Haven, Ct. 06510
Attn: Executive Director - WPCA

DISCHARGE PERMIT PROGRAM

RITA we use
EPA/OSP forms
also -
for guidance
Phil

Industry Name: _____ Permit No. _____

Address: _____

Contact
Person: Jim Wetmore

Phone: _____

Date of Inspection: 1/26/99

Inspector's
Signature: R. Baird

Remarks: _____

I met with Jim to look at silver recovery units, we looked at 4 units in the second floor radiology dept.

I saw how the unit magnetically catches 95% of the silver and then it is discharged into the steel wool canisters and the another canister for safe keeping.

Jim had given me the November results from the silver rec. unit testing done by an environmental service, there are 21 units total on the hospital grounds most of which were in the building. I inspected today, some of the others are scattered about the complex.

He suggested a follow up visit with Pat Mahua to help us with the plumbing in various bldgs.

Note: We can sample say 10 rec. unit they all have sample ports to top stream.

Laboratory Analysis and Violations Information - See reverse side

WPCA
RESTAURANT INSPECTION REPORT

Restaurant Name: _____ Contact/Title: _____
 Street Address: _____ Telephone #: _____
 Owner: _____ Owner's Address: _____

Employees Per Shift: _____ Seating Capacity: _____ Meals Per Week: _____ RWA Usage: _____ ccf per quarter
 General Menu Description: _____ Fryer/Fat: _____ YES or _____ NO
 Meals Served: _____ Breakfast _____ Lunch _____ Dinner # Days Open: _____

OIL & GREASE SEPARATOR

Manufacturer/Model: _____ Dimensions: _____ long x _____ high x _____ deep
 Rated Capacity (if known): _____ pounds or _____ gallons per minute or _____ gallons (large volume units)
 Date Installed: _____ Location: _____
 Best Sampling Point & Time: _____
 Log Sheet Present: _____ YES or _____ NO Up to Date: _____ YES or _____ NO Collected: _____ YES or _____ NO
 Opened for Inspection: _____ YES or _____ NO Condition: _____ Clean or _____ Normal or _____ Dirty (If dirty, sample)
 Effluent Sample Taken: _____ YES or _____ NO => *Complete Chain of Custody Documentation and Preserve for Lab.*
 Any History of Problems (back-ups, grease loading, etc.)? _____ YES or _____ NO
 Describe Problems: _____

FACILITIES

Garbage Grinder: _____ YES or _____ NO Model: _____ To Separator: _____ YES or _____ NO
 Dishwasher: _____ YES or _____ NO Model: _____ To Separator: _____ YES or _____ NO
 Discharge Temperature: _____ F. Discharge Volume: _____ gal # Cycles per Day: _____
 # Sinks: _____ # Floor Drains: _____ Is There a General Washdown of Facility: _____ YES or _____ NO
 When: _____ Estimated Volume: _____ gal.

REMARKS

DATE: _____ INSPECTOR: _____

SIGNATURE: _____

**INDUSTRIAL DISCHARGE PERMIT
WATER POLLUTION CONTROL AUTHORITY
CITY OF NEW HAVEN
IN ACCORDANCE WITH CHAPTER 25
CODE OF GENERAL ORDINANCES**

Permit Number: 22120062
Expiration Date: 7/15/1999
CT DEP Permit: CT0002853
CT DEP Permit: SP0002248
CT DEP Permit: GSW000750

PERMITTEE: H.B. IVES INC, HARROW PRODUCTS	EFFECTIVE: 7/15/1996
SERVICE ADDRESS: 50 IVES PL	REVISED:
MAILING ADDRESS: POB 1887	PHONE: 772-4837
CITY, STATE: NEW HAVEN, CT	ZIP CODE: 06508
CONTACT PERSON: PETER ELLIOT	PHONE: SAME
CONTACT PERSON: CARL JEPPESEN	

INSPECTION FREQ: M	LAB CODE: Y	
STATUS CODE: A	REPORT DATE: ANNUAL	SPECIAL CONDITIONS: ATTACHED

1. CHARACTERISTICS of wastewater permitted* (See General Permit Condition 1).

5-day BOD (mg/l)	< 250	Arsenic (mg/l)	0.05	Cyanide (amenable, mg/l)	0.1
Total Suspended Solids (mg/l)	< 250	Barium (mg/l)	5.0	Lead (mg/l)	0.1
Oil and Grease (total, mg/l)	< 100	Boron (mg/l)	5.0	Manganese (mg/l)	1.0
pH	5.5 - 9.5	Cadmium (mg/l)	0.1	Mercury (mg/l)	0.01
Temperature (deg. F)	< 150	Chromium (total, mg/l)	1.0	Nickel (mg/l)	1.0
Process Volume (max gpd)	110,000	Chromium (VI, mg/l)	0.1	Selenium (mg/l)	0.02
Domestic Volume (gpd)	6,000	Copper (mg/l)	1.0	Silver (mg/l)	0.1
Total Toxic Organics (mg/l)	1.42	Cyanide (total, mg/l)	0.65	Zinc (mg/l)	1.0

*The maximum concentrations listed above shall not be exceeded by a factor of 1.5, at any time, as measured by a grab sample. Exceeding these limits shall be considered a Discharge Permit Violation per City Ordinance.

2. LABORATORY ANALYSIS: The Permittee shall monitor and report to the General Manager - WPCA the following parameters of the wastewater discharge according to the following schedule (See Special Condition 3).

PARAMETER	SAMPLE TYPE	NOTES
Al, Ca, Cr, Cu, Fe, Ni, Pb, Zn	As required by DEP or WPCA	Monthly State DMRs may be substituted in lieu of other sampling requirements. Submit concurrently to WPCA
TSS, Chlorine, pH, Flow & Hours of discharge	As above	As above
TTO (if required)	As above	As above

3. REDUCTION DATA: In the event the General Manager - WPCA determines that a portion of the water purchased from the Regional Water Authority does not return to the sanitary sewer system, a reduction in the Permittee's sewer use charges may be allowed (See General Permit Condition 9).

VERIFICATION	NOTES
Engineering Study:	
Industrial Laundry:	
Metered Flow:	

4. PRETREATMENT: In the event the General Manager - WPCA determines that the Permittee's wastewater discharge is such that it requires the installation of additional pre-treatment facilities, the Permittee will submit to the General Manager - WPCA the following items, according to the schedule below: (See General Permit Condition 3 for the definition of terms).

PARAMETER	NOTES	DUE DATE
Engineering Report: XXX	Make hsz-waste disposal records available to WPCA annually. See Special Conditions 1 & 2	Nov. 15
Plans and Specifications:		
Start Construction:		
Pretreatment in Operation: XXX	Proposed changes to pretreatment system to be submitted (30) days in advance.	

5. WATER AUTHORITY ACCOUNT: 9609-0407-1301

SEE
3429

spread out
over 18 hrs
6 - minutes
metal finishing

**WPCA - INDUSTRIAL DISCHARGE PERMIT
SPECIAL CONDITIONS**

Ives Inc.
1996

1.0 *Copies of all manifest documents* related to the disposal of any material classified as regulated or hazardous including, but not limited to, materials contaminated with chromium, copper, cyanide, lead, nickel, zinc, metal hydroxide sludge, waste oils, organic solvents and acids/alkalies from the Permittee's facility shall be made available to the WPCA according to the schedule in Section 4. Pretreatment on the cover sheet of this Permit. Manifest documents shall be kept on file at Ives for a minimum of 2 years. Such wastes shall be removed by a certified waste hauler licensed for that purpose under Connecticut General Statutes.

2.0 *Any spill* of the materials listed above, or of related materials, shall be contained immediately, cleaned up and disposed of properly. Such spills may not be discharged to floor drains, toilets, sinks, City storm or sanitary sewers, surface water bodies or onto the ground. Attached is the WPCA 24 hour emergency telephone number. Use it to report any spills which enter the City sewer system.

3.0 *Sampling and laboratory analysis* shall be performed in accordance with the following conditions:

3.1 Mandatory analysis under this Permit shall be performed as directed in Section 2. Laboratory Analysis of the Permit cover sheet. Results of analysis are to be forwarded to the WPCA by the Permittee. Sampling and analysis should be in accordance with the latest edition of *Standard Methods for the Examination of Water and Wastewater*.

3.2 The WPCA reserves the right to observe all mandatory sampling. The Permittee must notify the WPCA at (203)-466-5265 48 hours prior to the day that sampling is to take place. In some cases the WPCA may take samples of its own or request that the Permittee's samples be split with the WPCA. Wastewater sampling and analysis will not be accepted unless these conditions are met or expressly waived by the WPCA.

3.3 For sampling required under Permits issued by the *Connecticut Department of Environmental Protection*:

3.3.a Permittee shall notify the WPCA 48 hours prior to the day that sampling is to take place.

3.3.b Copies of the results and related analytical reports (DMRs) shall be forwarded to the WPCA and the State concurrently by the Permittee.

4.0 Monitoring for amenable *cyanide* shall be immediately after the cyanide treatment system and prior to dilution with any non-cyanide waste stream.

July 15, 1996

Appendix C CTDEP Non-Domestic Wastewater Program: Sample Permit and DMR



STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

NPDES/STATE PERMIT



DPMS
NPDES
PER
XPR

H.B. Ives
Division of Harrow Products, Inc.
50 Ives Place
New Haven, CT. 06511

Re: Facility ID: 093-044
City of New Haven
Mill River Watershed

Attention: Robert L. Bradley, Vice President

This permit is issued in accordance with Section 22a-430 of Chapter 446k, Connecticut General Statutes, and regulations adopted thereunder, as amended, pursuant to an approval dated September 26, 1973, by the Administrator of the United States Environmental Protection Agency for the State of Connecticut to administer a N.P.D.E.S. permit program.

Your application for permit reissuance submitted on October 24, 1994 and amended on January 18, 1995 has been reviewed by the Connecticut Department of Environmental Protection.

The Commissioner of Environmental Protection (hereinafter "the Commissioner") has found that the system installed for the treatment of the discharge will protect the waters of the state from pollution when all the conditions of this permit have been met.

The Commissioner, acting under Section 22a-430, hereby permits H.B. Ives, Division of Harrow Products, Inc. to discharge treated metal finishing wastewater in accordance with the following conditions:

- I. The wastewater shall be collected, pretreated and discharged in accordance with the above referenced application and all approvals issued by the Commissioner or his authorized agent for the discharges and/or activities authorized by or associated with this permit.
- II. Prior to relocation of Discharge Serial No. 001 to the City of New Haven sanitary sewer, as required by paragraph IV of this permit, the discharge shall not exceed and shall otherwise conform to specific terms and conditions listed within this paragraph. The discharges shall be monitored and results reported to the Water Management Bureau (Attn: DMR Processing) by the end of the month after the month in which samples are taken according to the following schedule:

A. Discharge Serial No. 001

Monitoring Location: 1

Description: Metal finishing wastewater (Discharge Code 101035Z)

Receiving Stream: Mill River (Basin Code 6912)

Present/Future Water Quality Standard: SD/SB

Average Daily Flow: 35,100 gallons per day

Maximum Daily Flow: 110,000 gallons per day

- (1) The pH of the discharge shall not be less than 6.0 or greater than 9.0 (Code 00400-012).
- (2) The discharge shall not contain or cause in the receiving stream a visible oil sheen or floating solids.
- (3) The discharge shall not cause visible discoloration or foaming in the receiving waters.
- (4) The temperature of the discharge shall not increase the temperature of the receiving stream above 83°F or raise the normal temperature of the receiving stream more than 4°F.
- (5) The concentration of the following pollutants on any grab sample shall at all times be less than 1.5 times the maximum daily concentration noted below.

Parameter	Code	Average Monthly Limits	Maximum Daily Limits	Minimum Frequency of Sampling	Sample Type
Aluminum		1.0 mg/l	3.0 mg/l	Weekly	Daily Composite
Chromium, Total		1.0 mg/l	2.0 mg/l	Weekly	Daily Composite
Chromium, Hexavalent		0.1 mg/l	0.2 mg/l	Weekly	Grab Sample Average
Copper		1.0 mg/l	2.0 mg/l	Weekly	Daily Composite
Iron		3.0 mg/l	5.0 mg/l	Weekly	Daily Composite
Nickel		1.0 mg/l	2.0 mg/l	Weekly	Daily Composite
Zinc		1.0 mg/l	2.0 mg/l	Weekly	Daily Composite
Cyanide, Amenable		0.10 mg/l	0.2 mg/l	Weekly	Grab Sample Average
Cyanide, Total		0.65 mg/l	1.2 mg/l	Weekly	Grab Sample Average
Total Residual Chlorine			0.5 mg/l	Weekly	Grab Sample Average
Total Suspended Solids		20.0 mg/l	30.0 mg/l	Weekly	Daily Composite
Total Toxic Organics		-----	1.42 mg/l	Monthly	Grab
pH		See paragraph II.A. (1)		Weekly	Range during Composite
Lead		0.1 mg/l	0.5 mg/l	Weekly	Daily Composite
Aquatic Toxicity, Acute		See paragraph II.A. (6)		Quarterly	Daily Composite
Aquatic Toxicity, Chronic		See paragraph II.A. (7)		Quarterly	Daily Composite

- (a) The permittee shall record the total flow (Code 74076-007) and the number of hours of discharge (Code 81381-079) for each day of sample collection and/or the instantaneous flow (Code 00058-078) at the time of grab sample collection.
 - (b) The report shall include a detailed explanation of any violations of the limitations specified above.
 - (c) The permittee shall immediately begin monitoring for aquatic toxicity according to the frequency of sampling stated above. Monitoring shall be conducted according to the protocol established for determining compliance with acute toxicity limits set forth below. If any monitoring result indicates that the maximum daily acute toxicity limit has been exceeded additional testing as required by paragraph II.(8) (e) shall be performed.
 - (d) Monitoring for amenable cyanide shall be conducted after the cyanide treatment system prior to dilution with other metal finishing wastewaters.
 - (e) In lieu of analyzing for Total Toxic Organics at the frequency required above, each monthly report may include a statement certifying compliance with a Toxic Organic Management Plan approved by the Commissioner in accordance with 40 CFR 433.12. Monitoring for Total Toxic Organics at the frequency required above shall be done until such approval has been issued, at which time the minimum frequency of sampling shall be annual (January).
- (6) A daily composite sample of the effluent shall not exhibit acute toxicity in receiving waterbody.
- (a) Dilution equivalent to 152,167 gallons per hour (gph) is allocated to a zone of influence for assimilation of toxicity. This allocation shall be used to calculate the instream waste concentration (IWC) according to the formula:

$$\text{IWC} = \frac{\text{average daily flow}}{(\text{average daily flow} + \text{allocated zone of influence flow})} \times 100$$
 - (b) In lieu of average daily flow, the mean effluent flow rate for the previous 30 operating days may be used to calculate the instream waste concentration provided the permittee maintains an accurate record of the total flow and number of hours of discharge for each operating day and provided that the flow rate for any one operating day used in calculating the mean does not exceed the mean flow by more than twenty-five percent (25%).
 - (c) Compliance with this permit condition shall be achieved when the LC_{50} value for the effluent is greater than three (3) times the IWC.

- (d) Monitoring to determine compliance with this limit shall be performed Quarterly (January, April, July, October) following the toxicity testing protocol for static acute toxicity tests in "Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms" (EPA 600/4-85/013) with the following specifications:
- (i) Mysidopsis bahia (less than 5 days old) shall be used as test organisms.
 - (ii) Synthetic or natural seawater adjusted to a salinity of 34 ppt shall be used as dilution water in the test.
 - (iii) Test duration shall be 48 hours for Mysidopsis bahia.
- (7) A daily composite sample of the effluent shall not exhibit chronic toxicity in the receiving waterbody.
- (a) Dilution equivalent to 152,167 gallons per hour (gph) is allocated to a zone of influence for assimilation of toxicity. This allocation shall be used to calculate the instream waste concentration (IWC) according to the formula:
- $$IWC = \frac{\text{average daily flow} \times 100}{(\text{average daily flow} + \text{allocated zone of influence flow})}$$
- (b) In lieu of average daily flow, the mean effluent flow rate for the previous 30 operating days may be used to calculate the instream waste concentration provided the permittee maintains an accurate record of the total flow and number of hours of discharge for each operating day and provided that the flow rate for any one operating day used in calculating the mean does not exceed the mean flow by more than twenty-five percent (25%).
 - (c) Compliance with this permit condition shall be achieved when the LC_{50} value for the effluent is greater than twenty (20) times the IWC.
 - (d) Monitoring to determine compliance with this limit shall be performed Quarterly (January, April, July, October) following the toxicity testing protocol for static acute toxicity tests in "Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms" (EPA 600/4-85/013) with the following specifications:
 - (i) Mysidopsis bahia (less than 5 days old) shall be used as test organisms.
 - (ii) Synthetic or natural seawater adjusted to a salinity of 34 ppt shall be used as dilution water in the tests.
 - (iii) Test duration shall be 48 hours for Mysidopsis bahia.

- (8) (a) In determining LC_{50} values, five (5) test concentrations, in duplicate, shall be utilized.
- (b) The LC_{50} value shall be determined by the computational method (Binomial Distribution, Probit Analysis, Moving Average Angle, Spearman-Kärber) which yields the smallest 95% confidence interval and LC_{50} value which is consistent with the dose-response data.
- (c) Any test in which the survival of test organisms is less than ninety (90) percent in each replicate control test chamber or failure to achieve test conditions as specified in Section 22a-430-3(j)(7)(A) of the Regulations of Connecticut State Agencies, such as maintenance of appropriate environmental controls, constitutes an invalid test and the permittee shall immediately retest according to the requirements listed herein. Failure to submit suitable valid test results constitutes a permit violation.
- (d) Results of the toxicity tests required as part of this permit condition shall be entered on the Discharge Monitoring Report (DMR) for the month in which it was performed, using the appropriate parameter code. Additionally, complete and accurate test data, including all supporting chemical/physical measurements performed in association with the toxicity tests, as well as dose/response data shall be entered on the Aquatic Toxicity Monitoring Report form (ATMR). The ATMR shall be sent to the following address:
- Aquatic Toxicity
Connecticut Department of Environmental Protection
Water Management Bureau
79 Elm Street
Hartford, CT 06106-5127
- (e) If any test result indicates that the maximum daily toxicity limit for the effluent has been exceeded, a second sample of the effluent shall be collected and tested as described above and the results reported to Commissioner within 30 days of the receipt of the first set of test results.
- (f) If any two consecutive test results or any three test results in any twelve month period indicate that the maximum daily toxicity limit has been exceeded, the permittee shall immediately take all reasonable steps to eliminate toxicity wherever possible and shall submit a report for the review and approval of the Commissioner in accordance with Section 22a-430-3(j)(10)(c) of the Regulations of Connecticut State Agencies describing proposed steps to eliminate the toxic impact of the discharge on the receiving waterbody. Such a report shall include a proposed time schedule to accomplish toxicity reduction.

III. Following relocation of Discharge Serial No. 001 to the City of New Haven sanitary sewer as required by paragraph IV of this permit, the discharge shall not exceed and shall otherwise conform to the specific terms and

conditions listed below. The discharge shall be monitored and results reported to the Water Management Bureau (Attn: DMR Processing) by the end of the month after the month in which samples are taken according to the following schedule:

A. Discharge Serial No. 001

Monitoring Location: 1

Description: Metal finishing wastewater (Discharge Code 5010352)

Discharge Location: City of New Haven East Shore Sewage Treatment Facility (Facility ID: 093-001)

Average Daily Flow: 40,000 gallons per day

Maximum Daily Flow: 110,000 gallons per day

(1) The pH of the discharge shall not be less than 6.0 or greater than 9.0 (Code 00400-012).

(2) The concentration of the following pollutants on any grab sample shall at all times be less than 1.5 times the maximum daily concentration noted below.

Parameter	Code	Average Monthly Limits	Maximum Daily Limits	Minimum Frequency of Sampling	Sample Type
Aluminum		1.0 mg/l	3.0 mg/l	Weekly	Daily Composite
Chromium, Total		1.0 mg/l	2.0 mg/l	Weekly	Daily Composite
Chromium, Hexavalent		0.1 mg/l	0.2 mg/l	Weekly	Grab Sample Average
Copper		1.0 mg/l	2.0 mg/l	Weekly	Daily Composite
Iron		3.0 mg/l	5.0 mg/l	Weekly	Daily Composite
Nickel		1.0 mg/l	2.0 mg/l	Weekly	Daily Composite
Zinc		1.0 mg/l	2.0 mg/l	Weekly	Daily Composite
Cyanide, Amenable		0.10 mg/l	0.2 mg/l	Weekly	Grab Sample Average
Cyanide, Total		0.65 mg/l	1.2 mg/l	Weekly	Grab Sample Average
Total Residual Chlorine			0.5 mg/l	Weekly	Grab Sample Average
Total Suspended Solids		20.0 mg/l	30.0 mg/l	Weekly	Daily Composite
Total Toxic Organics		-----	1.42 mg/l	Monthly	Grab
pH		-----	-----	Weekly	Range during Composite
Lead		0.1 mg/l	0.5 mg/l	Weekly	Daily Composite

(a) The permittee shall record the total flow (Code 74076-007) and the number of hours of discharge (Code 81381-079) for each day of sample collection and/or the instantaneous flow (Code 00058-078) at the time of grab sample collection.

(b) The report shall include a detailed explanation of any violations of the limitations specified above.

* (c) In lieu of analyzing for Total Toxic Organics at the frequency required above, each monthly report may include a statement

certifying compliance with a Toxic Organic Management Plan approved by the Commissioner in accordance with 40 CFR 433.12. Monitoring for Total Toxic Organics at the frequency required above shall be done until such approval has been issued, at which time the minimum frequency of sampling shall be annual (January).

- (d) Monitoring for amenable cyanide shall be conducted after the cyanide treatment system prior to dilution with other metal finishing wastewaters.

IV. On or before April 30, 1996 the permittee shall redirect Discharge Serial No.001 to the New Haven POTW. The permittee shall also verify in writing to the Commissioner that all wastewater treatment system upgrades, as outlined in an engineering report submitted on June 1, 1995 in compliance with an EPA administrative order dated March 28, 1995, have been placed into operation and the resultant discharge has been relocated to the City of New Haven POTW.

This permit shall expire on October 30, 2000.

The permittee shall comply with the following sections of the Regulations of Connecticut State Agencies which are hereby incorporated into this permit:

Section 22a-430-3 General Conditions

- (a) Definitions
- (b) General
- (c) Inspection and Entry
- (d) Effect of a Permit
- (e) Duty
- (f) Proper Operation and Maintenance
- (g) Sludge Disposal
- (h) Duty to Mitigate
- (i) Facility Modifications; Notification
- (j) Monitoring, Records and Reporting Requirements
- (k) Bypass
- (l) Conditions Applicable to POTWs
- (m) Effluent Limitation Violations (Upsets)
- (n) Enforcement
- (o) Resource Conservation
- (p) Spill Prevention and Control
- (q) Instrumentation, Alarms, Flow Recorders
- (r) Equalization

22a-430-4 Procedures and Criteria

- (a) Duty to Apply
- (b) Duty to Reapply
- (c) Application Requirements
- (d) Preliminary Review
- (e) Tentative Determination
- (f) Draft Permits, Fact Sheets
- (g) Public Notice, Notice of Hearing

- (h) Public Comments
- (i) Final Determination
- (j) Public Hearings
- (k) Submission of Plans and Specifications. Approval.
- (l) Establishing Effluent Limitations and Conditions
- (m) Case by Case Determinations
- (n) Permit Issuance or Renewal
- (o) Permit Transfer
- (p) Permit Revocation, Denial or Modification
- (q) Variances
- (r) Secondary Treatment Requirements
- (s) Treatment Requirements for Metals and Cyanide
- (t) Discharges to POTWs - Prohibitions

Your attention is especially drawn to the notification requirements of subsection (i) (2), (i) (3), (j) (6), (j) (9) (C), (j) (11) (C), (D), (E), and (F), (k) (3) and (4) and (l) (2) of Section 22a-430-3.

This Permit requires the payment of an annual compliance determination fee as set forth in Section 22a-430-7 of the Regulations of Connecticut State Agencies.

The Commissioner reserves the right to make appropriate revisions to the permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the Clean Water Act or the Connecticut General Statutes or regulations adopted thereunder, as amended. The permit as modified or renewed under this paragraph may also contain any other requirements of the Clean Water Act or Connecticut General Statutes or regulations adopted thereunder which are then applicable.

Entered as a Permit of the Commissioner on the 30th day of October, 1995.



 Sidney J. Holbrook
 Commissioner

APPLICATION NO. 199501704
 PERMIT ID. CT0022853
 SP0002248

WCIS

FACT SHEET

Location Address:

Name H.B. Ives
 Street 50 Ives Place City New Haven
 State Connecticut Zip 06508

Contact Name Environmental Coordinator

Site Category: Point (☒) Non-point ()

SIC CODE: 3429 (Required for NPDES permits)

CHECK ALL THAT APPLIES

☐ MUNICIPAL
☐ UIC ☒ STATE ☒ NPDES
☐ MAJOR ☒ SIGNIFICANT MINOR ☐ MINOR

Compliance Schedule Included ☒ Yes ☐ No Order No.

Pollution Prevention Requirement

Environmental Equity Issue

Ownership Code: Private (X) Federal () State ()
 Municipal (town-owned only) () Other public ()

For UIC Permits: Total Wells Well Type 1 2 3

ENGINEER: David Cherico

PERMIT FEES

TENTATIVE DETERMINATION FEE \$

PERMIT ISSUANCE FEE \$

ANNUAL FEE \$ 5,450.00

PERMIT: SP0000445 SIG

DIST: 13 TOWN: 093 LOC: 050

DATE RECEIVED (STAMPED)

Facility: MANUFACTURING COMPANY

Contact: ERNEST

TOWN: NEW HAVEN

PHONE: 303-498

Logged Entered Q'd

KEY: SP0000445 ISSUE: 081393
Discharge: 001 1 Mon Loc: 1EXPIRE: 081398
Average Flow: 102000
TUBE & CLEAN: 5000

GPD

SAMPLE MONTH: DECEMBER 1998

SAMPLE WEEKS: 12/1/97 12/8/97 12/15/97 12/23/97 12/29/97

TIME	START	S/M	TYP	UNIT	PARAMETER	MINIMUM	AVERAGE	MAXIMUM	FREQ	1	2	3	4	5
13027	081096	0/1	DC	MG/L	CADMIUM, TOTAL (AS CD)	XXXXXXX	<0.01	0.01	01/01	<0.01	<0.01	0.01	DOWN	<0.01
10060	081096	0/1	GSA	MG/L	CHLORINE, TOTAL RESIDUAL	XXXXXXX	<0.02	<0.02	01/01	<0.02	<0.02	<0.02	DOWN	<0.02
31032	081096	0/1	GSA	MG/L	CHROMIUM, HEXAVALENT (AS	XXXXXXX	<0.01	<0.01	01/01	<0.01	<0.01	<0.01	U	<0.01
1114	081096	0/1	DC	MG/L	CHROMIUM, TOTAL (AS CR)	XXXXXXX	0.0425	0.40	01/01	0.03	0.02	0.10	H	<0.02
1142	081096	0/1	DC	MG/L	COPPER, TOTAL (AS CU)	XXXXXXX	0.345	0.92	01/01	0.20	0.92	0.13	S	0.13
1142	081096	0/1	DC	MG/L	COPPER, TOTAL (AS CU)	XXXXXXX	0.055	0.155	01/01	<0.05	0.155	<0.01	S	<0.01
11722	081096	0/1	GSA	MG/L	CYANIDE, FREE (AMEN. TO C	XXXXXXX	4.989	8.095	01/01	4.6	4.885	8.095	X	2.295
11720	081096	0/1	GSA	MG/L	CYANIDE, TOTAL (AS CN)	XXXXXXX	17	17	01/01	17	17	17	O	17
11381	081096	0/1	T	HR/D	DURATION OF DAILY DISCHARGE	XXXXXXX	65.3	71	01/01	59	71	65	I	66
00058	081096	0/1	G	GPM	FLOW RATE (INSTANTANEOUS)	XXXXXXX	95005	102979	01/01	86181	102979	94297	T	96223
71076	081096	0/1	T	GPD	FLOW, DAY OF SAMPLING	XXXXXXX	<0.05	<0.05	01/01	<0.05	<0.05	<0.05	V	<0.05
01851	081096	0/1	DC	MG/L	LEAD, TOTAL (AS PB)	XXXXXXX	0.293	0.37	01/01	0.37	0.36	0.10	C	0.10
01067	081096	0/1	DC	MG/L	NICKEL, TOTAL (AS NI)	XXXXXXX	3.36	3.36	01/90	--	3.36	--	V	--
00610	081096	0/1	DC	MG/L	NITROGEN, AMMONIA TOTAL (XXXXXXX	1.2	1.8	01/01	<1.0	<1.0	1.0	V	1.8
00098	081096	0/1	G	MG/L	OIL & GREASE HYDROCARBON	XXXXXXX								

RECEIVED

JAN 30 1998

EAST SHORE
WATER

STATE OF CONNECTICUT DEPARTMENT OF ENVIRONMENT & NATURAL RESOURCES
Bureau of Water Management - Discharge Monitoring Report

Printed on: 01-7-

ID# 870000415 ISSUED: 081393
Discharge: 001 1 Mon Loc: 1EXPIRE: 081398
Average Flow: 102000
Turb & Clean: 5000

GPD

SAMPLE MONTH: DECEMBER 1998

SAMPLE WEEKS: 12/1/97 12/8/97 12/15/97 12/22/97 12/29/97

DATE	START	S/M	TYP	UNIT	PARAMETER	MINIMUM	AVERAGE	MAXIMUM	FREQ	1	2	3	4	5
1143	083026	0/1	Q	MG/L	ORGANICS, TOTAL TOXIC (TT)	XXXXXXX	0.0398	0.0398	01/07	--	0.0398	--	XXXXXXX	--
1400	083054	0/1	RC	SC	PS	6.0	XXXXXXX	10	01/07	6.0/8.4	7.3/10	7.7/8.4	XXXXXXX	7.2/10
1530	083096	0/1	DC	MG/L	SOLIDS, TOTAL SUSPENDED	XXXXXXX	4.95	5.6	01/07	4.1	5.6	5.0	XXXXXXX	5.1
1652	083096	0/1	DC	MG/L	SINCE, TOTAL (AS EN)	XXXXXXX	0.068	0.15	01/07	0.06	0.15	0.08	XXXXXXX	0.01

RECEIVED
JAN 8 0 1999
EAST SHORE
WATER

PERMIT: SP00000445

DIST: 13 TOWN: 093 LOC: 050

FACILITY:	MANUFACTURING COMPANY	MAILING NAME:	MANUFACTURING COMPANY
ADDRESS:	DRIVE	ADDRESS:	DRIVE
CITY, STATE, ZIP:	NEW HAVEN, CT 06511	CITY, STATE, ZIP:	NEW HAVEN, CT 06511
CONTACT:		CONTACT:	
PHONE:	203-498-	PHONE:	203-498-

There are any changes or corrections with your facility information, please cross out incorrect information and replace with correct information.

THIS DMR CONSISTS OF 3 PAGES FOR THE REPORTING PERIOD DECEMBER 1998

STATEMENT OF ACKNOWLEDGEMENT

I, the undersigned, hereby certify that this statement and all information provided herein are true and correct to the best of my knowledge and belief. I am aware of the penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Authorized Official: Mr. _____	Title: Environmental Manager
Signature: <u>[Signature]</u>	Date: 1/26/98

RECEIVED
JAN 8 0 1998
EAST SHORE
NEW JERSEY

PERMIT:8F0000465

DIST: 13 TOWN: 091 LOC: 050

FACILITY:	MANUFACTURING COMPANY	MAILING NAME:	MANUFACTURING COMPANY
ADDRESS:	DRIVE	ADDRESS:	DRIVE
CITY, STATE, ZIP:	NEW HAVEN, CT 06511	CITY, STATE, ZIP:	NEW HAVEN, CT 06511
CONTACT:		CONTACT:	
PHONE:	203-498-	PHONE:	203-498-

there are any changes or corrections with your facility information, please cross out incorrect information and replace with correct information.

THIS DMR CONSISTS OF 3 PAGES FOR THE REPORTING PERIOD DECEMBER 1998

STATEMENT OF ACKNOWLEDGEMENT

I, the undersigned, hereby certify that this document and all information contained herein are true and correct to the best of my knowledge and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Authorized Official: Mr. Shmuck
 Signature: Shmuck

Title: Environmental Manager
 Date: 1/26/98

RECEIVED
 JAN 8 0 1998
 EAST SHORE
 WASH

Appendix D List of New Haven and CTDEP Wastewater Permit Holders

Page 1

PERMITEE	ST # MAIL	STREET ADDRESS	CONTACT 1	PHONE	PERMIT #
500 BLAKE ST RESTAURANT	500	BLAKE ST	MR. L. LUCIANO	387-0800	51110387
A. ANASTASIO & BONS TRUCKING C	80	MIDDLETOWN AVE.	ANDREW ANASTASIO, JR.	787-6746	GVS000268
ADVOCATE PRESS, INC.	441	CHAPEL ST	MARLEEN CENOTTI	777-0900	32110276
AMARANTE CUSTOM CATERING	62	COVE ST	PETER GARCEAU	487-2531	51110359
AMERADA HESS, NEW HAVEN TERM	1	HESS PLAZA	HOWARD GOLDMAN	908-750-6722	GVS000801
AMERICAN LINEN SUPPLY CO	63	LOCK ST	JOHNATHAN WINSLOW	777-7281	22113072
AMERICAN MEDICAL RESPONSE OF	56	CHURCH ST, 6TH FLO	JOSEPH F. PIROLO	562-4107	GVS000138
AMITY TEXACO	149	AMITY RD	BOB BODILLA	387-6513	13110372
AMOCO OIL CO.	125	FOXON BLVD.	WILLIAM KEARNEY	467-8224	GVS000137
ANTHONY'S OCEANVIEW	450	LIGHTHOUSE RD	ANTHONY DELMONACO	469-9010	53110377
APPICELLA'S BAKERY	365	GRAND AVE	ALPHONSE J. CIMINO	885-8204	11112272
ARAMARK UNIFORM SERVICE	220	WALLACE ST	BRUCE MORGAN	865-0123	22113058
ARCHIE MOORE'S	188.5	WILLOW ST	JAMES WOOLEY	773-8870	52110380
ATRIUM PLAZA HEALTH CARE	240	WINTHROP AVE	ROBERT CASEY	789-0500	21111419
AUTO SPA OF WOODBRIDGE	123	FOWLER ST.	JOHN ANASTASIO	389-4828	GVS000438
C & L CONN REST GROUP (BK#)	825	EAST MAIN STREET	JOHN SOUSA	467-9110	53110390
C & L CONN REST GROUP (BK#1448)	825	EAST MAIN STREET	JOHN SOUSA	787-4535	51110389
C & L CONN REST GROUP (BK#534)	825	EAST MAIN STREET	JOHN SOUSA	787-2889	52110388
C COWLES	83	WATER ST	LAWRENCE C. MOON, JR.	888-3117	12110071
C H R FURON	POB 1911		PAUL OSZUREK	777-3831	21110345
CANNELLI PRINTING CO INC	66	LAURA ST	VICTOR CANNELLI	467-1719	33110083
CARL'S BONED CHICKEN	208	FOOD TERMINAL PLZ	WILLIAM SANTARPIA	777-9048	31110356
CEDAR LAUNDRY	175	JAMES ST	TONY DEPINO	582-8565	33112280
CENTER FOR OPTIMUM CARE	915	ELLA T GRASSO BLV	MARK HOFFMAN	865-5155	21111418
CHAMPION AUTO SAFETY INC.	125	WHALLEY AVE	JOHN MALONEY	865-1171	11110389
CHART HOUSE RESTAURANT	100	SOUTH WATER ST	JACK REED	787-3486	51111319
CITY POINT YACHT CLUB	345	KIMBERLY AVE	GENERAL MANAGER	789-9304	41112268
CLIFTON HOUSE REHAB. CTR.	181	CLIFTON ST	WILLIAM SEYMOUR	467-1866	41110381
COIN-OP LAUNDROMAT	72	LANES POND RD	JOHN BOZZUTO	484-8281	31112134
CONN DOT (BLVD MAINT FACILITY)	100	SHIELD STREET	C/O NEIL AMWAKE CEE, I	880-853-0023	111110420
CONN DOT (POND LILY AVE.)	POB 317648		DAVID HARTLEY, ACCT'S	880-684-2228	GVS000621
CROSSROADS INC.	54	EAST RAMSDALL ST	CHRIS ROYSTON	387-0084	31110394
CUSTOM FOOD SERVICE	208	FOOD TERMINAL PLZ	ANTHONY GENOVESE	787-8895	31110370
D & V BEEF CO INC	210	FOOD TERMINAL PLZ	ROBERT FIORE	787-0253	31110328
D'AMATO'S SEAFOOD	17	KIMBERLY AVE	TONY SACCO	789-8249	31110339
EAST COAST ENVIRONMENTAL (OO)	454	QUINNIPAC AVE	LEO J TANORETI	469-2370	23121300
EASTERN PRESS INC (OOB)	854	ORCHARD ST	GENERAL MANAGER	777-2353	31110044
EDSAN CHEMICAL	438	EAST ST	SUSAN FEWES	824-3123	31112267
ELM CITY BREWING CO., INC. (OOB)	458	GRAND AVE	DARLINE MELOHIENNA	772-8790	23110371
ELM CITY HEALTH CENTER	50	MEAD ST.	PATTI LINCOLN	777-3481	31110392
EXXON CAR WASH KJC	284	WHALLEY AVE	KEVIN CARSE	865-8174	22110175
FORBES AVE CAR WASH	247	FORBES AVE	JOHN SERRA	467-1208	23110358
FRANK'S RADIATOR HOSPITAL	144	HUMPHREY ST	FRANK, GEN. MGR.	524-2021	13110815
FURNITURE DOCTOR CORP.	144	DERBY AVE.	BARRY RADIN	782-2222	SP0000875
G & O MFG CO	POB 1204		JOSEPH PETRIE	562-5121	23112264
GATEWAY COMMUNITY COLLEGE	60	SARGENT DR	LOUIS S. D'ANTONIO	789-7021	31110324
GOODLUBE EXPRESS CO.	1249	FARMINGTON AVE, 2	ABRAHAM ROSEN	880-621-3355	GVS
GOODLUBE EXPRESS CO. (OOB)	1249	FARMINGTON AVE, 2	ABRAHAM ROSEN	880-621-3355	GVS000107
GRAND LAUNDROMAT	214	GRAND AVE	GENERAL MANAGER	777-2817	33112281

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PERMITTEE	ST # SERVICE	STREET ADDRESS	CONTACT 2
500 BLAKE ST RESTAURANT			GRANT BARONE, MGR.
A. ANASTASIO & SONS TRUCKING C			
ADVOCATE PRESS, INC.			H.D. PARTNERSHIP
AMARANTE CUSTOM CATERING			ANDREW AMARANTE
AMERADA HESS, NEW HAVEN TERM	100	River St.	PETER HAID, JOHN BUSKE
AMERICAN LINEN SUPPLY CO			F. SLOWEY
AMERICAN MEDICAL RESPONSE OF	58	MIDDLETOWN AVE.	
AMITY TEXACO			
AMOCO OIL CO.			
ANTHONY'S OCEANVIEW			SCOTT BIALCZAK
APPICELLA'S BAKERY			
ARAMARK UNIFORM SERVICE			DALE CRETENS
ARCHIE MOORE'S			ROBERT FUCHS
ATRIUM PLAZA HEALTH CARE			MARK DURSO
AUTO SPA OF WOODBRIDGE			JOE GUINAN
C & L CONN REST GROUP (BK#)	380	FOXON BLVD.	GINA CINTRON
C & L CONN REST GROUP (BK#1448)	108	WHALLEY AVE.	JANIS KALMAN
C & L CONN REST GROUP (BK#834)	900	CHAPEL ST.	REGGIE FERGOUSON
C COWLES			CHARLES COSTELLO
C H R FURON	407	EAST ST	MALCOLM SWIFT, ED SCHEYTT
CANNELLI PRINTING CO INC			
CARL'S BONED CHICKEN			ROBERT SANTARPIA
CEDAR LAUNDRY			
CENTER FOR OPTIMUM CARE			
CHAMPION AUTO SAFETY INC.			
CHART HOUSE RESTAURANT			
CITY POINT YACHT CLUB			
CLIFTON HOUSE REHAB. CTR.			M. GRIFFITH
COIN-OP LAUNDROMAT	315	EDGEWOOD AVE	
CONN DOT (BLVD MAINT FACILITY)	18	IND. STREET	WILLY MATTHEW, CONN DOT
CONN DOT (POND LILY AVE.)	140	POND LILY AVE.	ED ALDRIDGE, KEN DALY, DANIEL YOUN
CROSSROADS INC.			MIGUEL LAQUINA
CUSTOM FOOD SERVICE			JOHN HARVEY
D & V BEEF CO INC			PAUL FIORE, RICHARD PRUNIER
D'AMATO'S SEAFOOD			
EAST COAST ENVIRONMENTAL (OO)			
EASTERN PRESS INC (OOB)			
EDSAN CHEMICAL			
ELM CITY BREWING CO., INC. (OOB)			RON PAGE
ELM CITY HEALTH CENTER			LOU GUIDA
EXXON CAR WASH KJC			
FORBES AVE CAR WASH			
FRANK'S RADIATOR HOSPITAL			WILLIAM EZEKOE (LANDLORD)
FURNITURE DOCTOR CORP.			
G & O MFG CO	100	GANDO DR	HANK MCHALE
GATEWAY COMMUNITY COLLEGE			
GOODLUBE EXPRESS CO.	18	AMITY RD	
GOODLUBE EXPRESS CO. (OOB)	310	FOXON BLVD	
GRAND LAUNDROMAT			

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PERMITTEE	ST & MAIL	STREET ADDRESS	CONTACT 1	PHONE	PERMIT #
GRAPHIC PREPARATION SERVICE	227	FOOD TERMINAL PLZ	DOUG LEBLANC	582-9151	31100221
GREATER NEW HAVEN AUTO AUCT	51	LONGHINI LANE	WILLIAM MALONE	772-1216	13110375
H KREVIT & CO	POB 9433		DON DECELLO	772-3350	21122420
H.B. IVES INC, HARROW PRODUCTS	POB 1857		PETER ELLIOT	772-4937	22122082
HINES SUDDEN SERVICE (KFC)	31	TOWN LINE RD	LOKMAN CHOWDHURY	777-5414	31111382
HOFFMAN PRESS INC		PRINTERS LANE	BILL HOFFMAN	965-0818	31110029
HOPKINS SCHOOL	988	FOREST RD	WILLIAM W. BAIKE	397-1001	41112268
HOSPITAL OF ST RAPHAEL	1450	CHAPEL ST	ROBERT PALIMBERI	789-3968	21111120
HUMMEL BROS INC	180	SARGENT DR	KARL AULBACH	787-4113	21112226
HUMPHREYS EAST	175	HUMPHREY ST	ANTHONY PREFETERA	782-1506	52110384
INSULATING MATERIALS INC	POB 1404		STEVEN FRANCESSE	562-2171	13110028
J.P. DEMPSEYS	POB 3817		PAUL KAPLAN	624-8991	temp
JCR FOODS DBA MCDONALD'S	214	AMITY RD.	FRANK RODRIQUEZ	789-9841	51110385
JCR FOODS DBA MCDONALD'S	214	AMITY RD.	FRANK RODRIQUEZ	785-9944	53110383
JCR FOODS DBA MCDONALD'S	214	AMITY RD.	FRANK RODRIQUEZ	865-9185	51110388
JCR FOODS DBA MCDONALD'S	214	AMITY RD.	FRANK RODRIQUEZ	397-8766	51110387
JEVISH HOME FOR THE AGED	189	DAVENPORT AVE.	DAN GRAY	789-1850	21111417
JOSEPH MERRITT & CO.	882	GRAND AVE	BUD BODE	562-9886	32110320
LAMBERTI PACKING CO	207	FOOD TERMINAL PLZ	JOE KELLY	562-0436	31110327
LEE MYLES TRANSMISSION	240	WHALLEY AVE	JOHN VUOSO	785-8011	12110337
LEHMAN BROTHERS INC	101	FOSTER ST	ERIC LEHMAN	624-9911	22111064
LENDERS BAGEL BAKERY INC.	724	GRAND AV	TOM KORES	934-8231	32111067
LEVINE'S TRANSMISSIONS INC.	339	ELLA GRASSO BLVD.	MICHAEL CORRIGAN	788-2900	11110280
LILY TRANSPORTATION CORP.	46	GOODWIN STREET	JOHN SIMOURIAN	487-9073	GV8000356
LOMBARD MOTORS	140	GANDD DR.	CHUCK RUBINO	624-3258	SP0001143
LONG WHARF MOBIL CAR WASH	200	SARGENT DR	HARVEY GLAZER	502-0870	21110302
LONGHINI SAUSAGE CO	41	LONGHINI LANE	RICHARD LONGHINI	624-7110	31110242
MARY WADE HOME INC.	118	CLINTON AVE.	LAURENE FRANCHI	562-7222	33110383
MEDWASTE MANAGEMENT, INC OF	46	RIVER ST	ALAN TUCHMANN	800-459-1555	89
METRO-NORTH RR SHOP	0	XXX	GM		SP0000036
METROPOLITAN METAL (CORP)	400	GOODRICH ST	PAT FARILO	562-2055	22110391
MICHAEL'S CLEANERS	90	YORK ST	GENERAL MANAGER	778-5700	11110349
MILFORD BARREL CO.	100	WARWICK ST.	RICHARD GIANNATTASIO	489-8370	02
NAPOLI MEAT & SAUSAGE	240	SARGENT DR	MAURICE SCIALIS	865-2119	31111219
NEW ENGLAND LINEN SUPPLY	149	DERBY AVE	JOHN TIRADO	562-2161	21113322
NEW ENGLAND MEAT & POULTRY	215	FOOD TERMINAL PLZ	GENERAL MANAGER	865-0842	31110329
NEW HAVEN BOARD OF EDUCATION	444	CHAPEL STREET	JAY GUSTATIS	948-8813	3
NEW HAVEN DEPT. OF PUBLIC WORKS	238	MIDDLETOWN AVE.	CLAUDETTE FORD, DIRE		SP0002260
NEW HAVEN DEPT. OF PUBLIC WORKS	238	MIDDLETOWN AVE.	CLAUDETTE FORD, DIRE		SP0001401
NEW HAVEN FIRE DEPT.	952	GRAND AVE.	CAPTAIN GRANT		SP0000649
NEW HAVEN FOOD TERMINAL	POB 8928		JOSEPH VANACORE	562-7289	31111328
NEW HAVEN MFG. CO.	446	BLAKE ST	TONY BIONDO	387-2572	21110088
NEW HAVEN REGISTER	40	SARGENT DR	WILLIAM RUSH	789-5200	31110180
NIZEN MOTOR PARTS	34	SPERRY ST	PETER NIZEN	777-3855	12110279
NUTMEG TECHNOLOGIES	125	MARKET ST.	JIM ARMSTRONG	777-7891	33112220
OLIN METALS RESEARCH LAB	91	SHELTON AV	RICHARD VIEROD	495-8550	22110363
PALMIERI FOOD PRODUCTS	POB 1078		PATRICK PALMIERI	624-0042	32113728
PERSONAL TOUCH CAR WASH	490	FOXON BLVD.	DOMINIC D'AGOSTMO	469-0660	23110375
PIRELLI / ARMSTRONG TIRE	500	SARGENT DR	GENE DUFFY	784-2200	31110364

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PERMITTEE	ST & SERVICE	PERMIT NO.	CONTACT 2
GRAPHIC PREPARATION SERVICE			
GREATER NEW HAVEN AUTO AUCTION			JOANNE HANLEY
H KREVIT & CO	73	WELTON ST	GEORGE KREVIT
H.B. IVES INC, HARROW PRODUCTS	50	IVES PL	CARL JEPPESEN
HINES SUDDEN SERVICE (KFC)	311	WHALLEY AVE	PATRICK LEWIS
HOFFMAN PRESS INC			
HOPKINS SCHOOL			
HOSPITAL OF ST RAPHAEL	1460	CHAPEL ST	MAUREEN KEELER, DAN ROY
HUMMEL BROS INC			MARY ELLEN, WILLIAM HUMMEL
HUMPHREY'S EAST			ALEX WALKER
INSULATING MATERIALS INC.	188	CHAPEL ST	GARY BOYONA
J.P. DEMPSEYS	874	STATE ST.	JOHN PANZA
JCR FOODS DBA MCDONALD'S	280	KIMBERLY AVE	JOSEPH RODRIGUEZ
JCR FOODS DBA MCDONALD'S	308	FERRY ST	PERFECTO RIVERA
JCR FOODS DBA MCDONALD'S	250	WHALLEY AVE	TERRY BOOMER
JCR FOODS DBA MCDONALD'S	1094	WHALLEY AVE	JASON SCOTT
JEWISH HOME FOR THE AGED			ANTHONY GIONETTI
JOSEPH MERRITT & CO.			
LAMBERTI PACKING CO			JEAN LAMBERTI
LEE WILCO TRANSMISSION			MIKE MUSCHELLI
LEHMAN BROTHERS INC			
LENDERS BAGEL BAKERY INC.			KIM WILFORD
LEVINE'S TRANSMISSIONS INC.			
LILY TRANSPORTATION CORP.			HENRY CISTALI
LOMBARD MOTORS			CANDICE MILLER
LONG WHARF MOBIL CAR WASH			MICHAEL MONAGHAN
LONGHINI SAUSAGE CO			
MARY WADE HOME INC.			JOE ORTOWSKI
MEDIWASTE MANAGEMENT, INC OF			
METRO-NORTH RR SHOP			
METROPOLITAN METAL (DOB)			
MICHAEL'S CLEANERS			
MILFORD BARREL CO.			TONY G.
NAPOLI MEAT & SAUSAGE			
NEW ENGLAND LINEN SUPPLY			SKIP TOBIN
NEW ENGLAND MEAT & POULTRY			
NEW HAVEN BOARD OF EDUCATION			
NEW HAVEN DEPT. OF PUBLIC WORKS			
NEW HAVEN DEPT. OF PUBLIC WORKS	260	Middletem Ave.	BRIAN FUNK
NEW HAVEN FIRE DEPT.			
NEW HAVEN FOOD TERMINAL	250	SARGENT DR	JOSEPH VANACORE, JR.
NEW HAVEN MFG. CO.			BILL DIFRANCESCO, DENNIS HORVATH
NEW HAVEN REGISTER			W.A. MAJOR & JERRY SIMPKINS
NIZEN MOTOR PARTS			
NUTMEG TECHNOLOGIES	130	HAVEN ST	G. GEISINGER, C. COHEN
OLIN METALS RESEARCH LAB			DEREK TYLER
PALMIERI FOOD PRODUCTS	146	HAMILTON ST.	NANCY B.
PERSONAL TOUCH CAR WASH			
PIRELLI / ARMSTRONG TIRE			HOPE RUSHWORTH, SHERWOOD WILLA

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PERMITTEE	ST # MAIL	STREET ADDRESS	CONTACT 1	PHONE	PERMIT #
POLYCHEM CORPORATION	12	LYMAN ST	LOUISE BARTOLETTA	777-7363	31112085
POPEYE'S DBA NORTHEAST FEATH	POB 4308		KEITH SOLOMON	562-7674	31111361
R. PERRI & SONS (COB)	26	KENDALL ST	ROBERT SALZWEDEL	468-1374	23113061
RICK'S CLOTH CAR WASH	144	MAIN ST ANNEX	RICHARD FLORILL	468-2773	GVW000332
RIVERSIDE LAUNDRY	251-253	GRAND AVE	VINCENT CUBANO	865-6891	31112228
ROUTE 80 SHELL	1228	QUINNIPIAC AVE.	RICHARD FICORILLI	468-0789	GVW000152
RUSTY SCUPPER	501	LONG WHARF DRIVE	MICHAEL CARR	777-5711	52110379
SARGENT AND CO	100	SARGENT DR	ERNEST HILL	562-2151	21122074
SCHULZ ELECTRIC CO	30	GANDO DR	ROBERT DAVIS	562-6811	13110373
SCREEN TEK	373	LEXINGTON AV	GENERAL MANAGER	468-1188	31110131
SIMKINS INDUSTRIES	258	EAST ST	BILL DOUCETTE	787-7171	22123060
SNET	195	CHURCH ST.	RON GRAZIANI	771-2220	GV5000581
SNET	195	CHURCH ST.	RON GRAZIANI	771-2325	GV5000615
SOUTH CENTRAL RWA	90	SARGENT DR	ROBERT ORIFICE	624-6671	21110055
ST. REGIS HEALTH CENTER, INC.	1364	CHAPEL ST	KIM CZETIGA	867-8300	31110381
STANDARD BEEF CO	POB 8877		BILL DOBER	787-2164	31110331
STATEWIDE MEAT	211	FOOD TERMINAL PLZ	MARK GUARNIERI	777-6889	31110332
STOP & GO TRANSMISSIONS	390	EAST ST	GENERAL MANAGER	624-8003	12110318
STOP-IN CAR WASH	1510	WHALLEY AVE	VINCENT FERRER	397-3886	21110274
SYLVAN CLEANERS	383	WHALLEY AV	GENERAL MANAGER	562-3480	11110209
T L C LAUNDROMAT	111	DERBY AV	GENERAL MANAGER	889-9359	31110225
TAY-MAC INC. (MCDONALD'S, FOXO	225	FOXON BLVD	TED TAYLOR	387-8803	51110257
THE HARTY PRESS, INC.	POB 324		MICHAEL F. PLATT	562-5112	33110321
U I CO. NEW HAVEN HARBOR STA.	157	CHURCH ST	WAYNE BARRET	498-3001	41112350
U S REPEATING ARMS CO	344	WINCHESTER AV	MATTHEW RITTER	789-5000	22113244
US POSTAL SERVICE	60	BREWERY ST.	PHILIP PEKOSKE	782-7161	GV5000445
WASH TUB	5050	NO. INDIAN HORSE T	PETER GOLDBERG	000-0000	31112385
WAUCOMA YACHT CLUB	279	FRONT ST	GENERAL MANAGER	865-0910	41112340
WEST ROCK HEALTH CARE	34	LEVEL ST.	MICHAEL RESNICK	389-8744	31110386
WEST SHORE CLEANERS INC	323	WHALLEY AV	IRVING J. CALECHMAN	776-0231	32110278
WOZNIAKS MEAT PRODUCTS	836	GRAND AVE	STANLEY WOZNAK	562-8478	32111201
WYATT ENERGY INC	280	WATERFRONT ST	ED FUCHS	488-4400	41112348
YALE NEW HAVEN HOSPITAL	20	YORK ST	D.C. DOYLE	785-2418	22121338
YALE UNIVERSITY DINING HALLS	284	ELM ST.	CHUCK BENNETT	784-8343	31110363

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PERMITTEE	ST & SERVICE	STREET ADDRESS	CONTACT 2
POLYCHEM CORPORATION			JENNIFER SPAULDING, JOHN BARGENT
POPEYE'S DBA NORTHEAST FEATH	35	WHALLEY AVE	JAMES HARRIS
R. PERRI & SONS (OOB)			FRANK PERRI
RICKS CLOTH CAR WASH			
RIVERSIDE LAUNDRY			SEVERINO FASULO
ROUTE 60 SHELL			
RUSTY SCUPPER			MARGARET WENDT
SARGENT AND CO	100	SARGENT DR	THANASIS MOLOKOTOS
SCHULZ ELECTRIC CO			RAY DAHMAN, TIM TOBIASEN
SGREEN TEK			
SIMKINS INDUSTRIES			FRANK CAMERA
SNET	4	HAMILTON ST	RICHARD WELLS, JOHN KUMIEGA
SNET	10	WALL ST	DAVE JOHNSON, JOHN KUMIEGA
SOUTH CENTRAL RWA			KEN SKOV, ALAN HESS
ST. REGIS HEALTH CENTER, INC.			PAT MOORE
STANDARD BEEF CO	216	FOOD TERMINAL PLZ	HENRY BAWRASKY, FRED AUGER
STATEWIDE MEAT			STEPHEN FALCIGNO
STOP & GO TRANSMISSIONS			
STOP-IN CAR WASH			
SYLVAN CLEANERS			
TLC LAUNDROMAT			
TAY-MAC INC. (MCDONALDS, FOXO			JOHN MCKNIGHT
THE HARTY PRESS, INC.	205-207	RIVER ST	ROBERT GRAHAM
UI CO. NEW HAVEN HARBOR STA	1	WATERFRONT ST	CLAUDE LYNCH, ROBERT FISCUS
U S REPEATING ARMS CO			PAUL DEMONNATO, DAVID MCINTOSH
US POSTAL SERVICE			M. AMATURO
WASH TUB	40	FOSTER ST	SALLIE SPERLING
WALCOMA YACHT CLUB			
WEST ROCK HEALTH CARE			PAUL ROGERS
WEST SHORE CLEANERS INC			
WOZNIAKS MEAT PRODUCTS			
WYATT ENERGY INC	85	EAST ST	
YALE NEW HAVEN HOSPITAL			PAT MATURO & W.J. MAHONEY
YALE UNIVERSITY DINING HALLS	333	FOOD TERMINAL PLZ	EDWARD LEY, PURCHASING

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CT DEP LIST - 1

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Permittee	Permit #	Address	Type	Size	Expires
New Haven	CT0100368	345 East Shore Parkway	NPDES	Major	1999
New Haven	GSW000998	345 East Shore Parkway	Stormwater	Minor	1997
New Haven	CT0100340	Boulevard Pump Station	NPDES	Major	1991
New Haven	CT0100358	East Street Pump Station	NPDES	Major	1983
New Haven Fire Dept.	SP0000549	Grand Ave.	Pretreatment	Minor	2000
Simkins Industries	CT0003425	259-260 East Street	NPDES	Minor	
Simkins Industries	GSW000799	259-260 East Street	Stormwater	Minor	1997
Simkins Industries	GSW001218	259-260 East Street	Stormwater	Minor	1997
Simkins Industries	SP000043	259-260 East Street	Pretreatment	Major	
United Illuminating	CT0003794	510 Grand Ave.	NPDES	Major	1992
United Illuminating	SP0002244	510 Grand Ave.	Pretreatment	Signif	1999
Seamless Rubber Co.	CT0003409		NPDES		1979
New Haven Mfg. Co.	CT0001937	448 Blake Street	NPDES	Minor	1981
New Haven Mfg. Co.	GSW000122	448 Blake Street	Stormwater	Minor	1997
New Haven Mfg. Co.	SP0000106	448 Blake Street	Pretreatment	Major	1997
TRW Geometric Tool Div. (OOB)	SP000029	1 Valley Street	Pretreatment		1988
US Repeating Arms Co.	SP0000511		Pretreatment	Minor	1988
Lehman Brothers, Inc.	GPH000285	191 Foster Street	Photographic	Minor	2003
HB Ives	CT0022853	50 Ives Place	NPDES	Signif	1995
HB Ives	GSW000750	50 Ives Place	Stormwater	Minor	1997
HB Ives	SP0002248	50 Ives Place	Pretreatment	Minor	
Pirelli Tire		500 Sargent Drive	NPDES	Minor	
Pirelli Tire	GSW000211	500 Sargent Drive	Stormwater	Minor	1997
Sargent Manufacturing Co.	CT0001098	100 Sargent Drive	NPDES	Major	1999
Sargent Manufacturing Co.	GSW000027	100 Sargent Drive	Stormwater	Minor	1997
Sargent Manufacturing Co.	SP0000445	100 Sargent Drive	Pretreatment	Signif	1998
Wyatt Energy, Inc.	GHT010008	85 East Street		Minor	1997
C. Cowles Co.	SP0000775	83 Water Street	Pretreatment	Minor	1996
CHR Industries / Furon	CT0002810	407 East Street	NPDES	Minor	
CHR Industries / Furon	GSW000575	407 East Street	Stormwater	Minor	1997
Nutmeg Technologies	GSW000889	125 Market Street	Stormwater	Minor	1997
Nutmeg Technologies	SP0001117	125 Market Street	Pretreatment	Minor	1999
H Kravt & Co.	SP0003836	73 Walton Street	Pretreatment	Minor	1997
H Kravt & Co.	GSW000690	73 Walton Street	Stormwater	Minor	1997
So. CT Gas Co.	CT0024309	347 Chapel Street	NPDES	Minor	1987
Conrail	CT0023990		NPDES	Minor	1982
Exxon Co. (now Cargill Inc.)	CT0027456	481 East Shore	NPDES	Signif	1986
WYCO	CT0023159	280 Waterfront Street	NPDES	Minor	1995
Gulf Oil / Gateway Corp.	CT0021130	400 Waterfront Street	NPDES	Minor	1993
Gulf Oil Ltd. Partnership	CT0021078	500 Waterfront Street	NPDES	Minor	1992
Gulf Oil Co. - Groundwater	CT0026514	500 Waterfront Street	NPDES	Signif	1992
Cumberland Farms Inc.	CT0027715		NPDES	Minor	
Chevron USA, Gulf Station	GHT010006	500 Waterfront Street		Minor	1997
United Illuminating	CT0003760	1 Waterfront Street	NPDES	Major	1996
United Illuminating	GPH000229	157 Church Street	Photo	Minor	2003
New Haven Terminal Inc.	CT0024317		NPDES	Minor	1987
Mobil Oil Corp.	CT0020109	134 Forbes Ave.	NPDES	Minor	1994
Mobil Oil Corp.	GGR000100	134 Forbes Ave.	Groundwater	Minor	2001
Mobil Oil Corp.	SP0002200		Pretreatment	Minor	
Eaton Corp.	CT0023507		NPDES		1985
Eaton Corp. (OOB)	SP0000184		Pretreatment	Minor	1983
Rockbestos Co. Inc.	CT0003026		NPDES	Minor	1984
New Haven Heat Treating Co.	CT0026431		NPDES		1991
Olin Metals Research Labs	SP0000763	91 Shelton Ave.	Pretreatment	Minor	1981
Olin Metals Research Labs	SP0002229	91 Shelton Ave.	Pretreatment	Minor	
DOT Rail Service (Metro North)	SP0000415		Pretreatment	Signif	1996
Insulating Materials Inc.	U0000277	168 Chapel Street	Injection		
East Coast Environmental Service Co.	CT0021784	454 Quinnipiac Ave.	NPDES	Minor	1992
East Coast Environmental Service Co.	SP0000094	454 Quinnipiac Ave.	Pretreatment	Major	1989
G&O Manufacturing Co.	GSW000123	100 Gando Drive	Stormwater	Minor	1997
G&O Manufacturing Co.	SP0000282	100 Gando Drive	Pretreatment	Minor	1996
Chase Enterprises	CT0024171		NPDES	Minor	1993
New Haven Register	GV5000498	40 Sargent Drive	Vehicle	Minor	
New Haven Register	SP0000345	40 Sargent Drive	Pretreatment	Minor	1986
Gaffey Terminals Corp.	CT0024281	85 Forbes Ave.	NPDES	Minor	1999
American Medical Response of CT	GV5000138	58 Middletown Ave.	Vehicle	Minor	2000
American Medical Response of CT	GV5000126	58 Middletown Ave.	Vehicle	Minor	2000

CT DEP LUT - 2

6/11/98

Permittee	Permit #	St/Conn/Other	Address	Type	Size	Expires
Mt. Ave Dev Corp (Am Med Respo	SP0001290	66	Middletown Ave.	Pretreatment		
Hospital of Saint Raphael	QDS000041	1450	Chapel Street	Domestic	Minor	2002
Hospital of Saint Raphael	GPH000273	1450	Chapel Street	Photo	Minor	2004
Hospital of Saint Raphael	SP0001478	1450	Chapel Street	Pretreatment	Minor	
Landmark Dev. Corp. of America	SP0002097			Pretreatment	Minor	
Fusco Corp. / Longwharf	SP0001749			Pretreatment	Minor	
H. Bixon & Sons, Inc.	GSW000691	808	Washington Street	Stormwater	Minor	1997
New Haven Landfill	LF0000041	260	Middletown Ave.		Minor	
New Haven Dept. of Public Works	SP0002290	260	Middletown Ave.	Pretreatment	Minor	
Schulz Electric Co.	SP0000550	30	Gando Dr.	Pretreatment	Minor	1998
Cambridge Development Corp.	SP0001750			Pretreatment	Minor	
Levine's Transmissions Inc.	GV8000487	339	Elia Grasso Blvd.	Vehicle	Minor	
Metro-North Commuter Shop	SP0000098			Pretreatment	Signif	1997
Urefek, Inc.	GCW000013	30	Lenox Street	Cooling	Minor	2002
Connecticut Plating Tech., Inc. (OOB)	SP0001754			Pretreatment	OOB	
Olin Corp. (OOB)	SP0001253	24	Science Park	Pretreatment	Signif	1995
Forbes Ave Car Wash	SP0000818	247	Forbes Ave.	Pretreatment	Minor	1997
Eventide Condos	SP0001754-?			Pretreatment	Minor	
Personal Touch Car Wash	SP0000825	490	Faxon Blvd.	Pretreatment	Minor	1997
Furniture Doctor Corp.	SP0000875	144	Derby Ave.	Pretreatment	Minor	
Goodbye Express Co.	SP0001043			Pretreatment	Minor	1998
Shell Oil Co.	SP0001121		Quinnipiac Ave.	Pretreatment		
Shell Oil Co.	GVW000152	1228	Quinnipiac Ave.	Vehicle	Minor	2001
Lombard Motors	SP0001143	140	Gando Dr.	Pretreatment	Minor	1998
New Haven Brewing Co.	SP0001251	458	Grand Ave.	Pretreatment	Minor	1998
New Haven Transfer Station	CT0028438	280	Middletown Ave.	NPDES	Minor	1997
New Haven Public Works	SP0001401	280	Middletown Ave.	Pretreatment	Minor	2003
Rick's Cloth Car Wash	GVW000325	144	Main St./Annex	Vehicle	Minor	
Greater New Haven Auto Auction	GV8000186	51	Longhini Lane	Vehicle	Minor	2000
A. Anastasio & Sons Trucking Co.	GV8000268	80	Middletown Ave.	Vehicle	Minor	2002
Sudesh Corp. (DBA Grease'n Go)	GV8000197	310	Faxon Blvd.	Vehicle	Minor	2001
Amity Taxaco (was Rick's Taxaco)	GVW000101	149	Amity Rd.	Vehicle	Minor	2000
Yale New Haven Hospital	QDS000024	20	York St.	Domestic	Minor	2002
Yale New Haven Hospital	GPH000190	20	York St.	Photo	Minor	2002
Yale New Haven Hospital	SP0002021	20	York St.	Pretreatment	Minor	
Amerco Oil Co.	GVW000137	125	Faxon Blvd.	Vehicle	Minor	2001
Udec Pharmaceuticals	GPH000224	25	Science Park, Suite 360	Photo	Minor	2002
Amerada Hess Corp.	CT0028823	100	River St.	NPDES	Minor	
Amerada Hess Corp.	GSW001318	100	River St.	Stormwater	Minor	1997
Amerada Hess Corp.	GV8000501	100	River St.	Vehicle	Minor	2005
South Central RWA	GV8000287	80	Sargent Drive	Vehicle	Minor	2002
SNET Harbor Vehicle Maint.	GGR000112	4	Hamilton St.	Groundwater	Minor	2001
Fair Haven Marina	GSW000048	309	Front Street	Stormwater	Minor	1997
US Repeating Arms Co.	GSW000051	275	Winchester Ave.	Stormwater	Minor	1997
Collins Maritime Partners	GSW000092	82 & 88-110	South Water St.	Stormwater	Minor	1997
Conn DOT, New Haven Div.	GSW000209	470	James Street	Stormwater	Minor	1997
Tilton Conn., Inc.	GSW000235		Ferry Street	Stormwater	Minor	1997
Lender's Bagel Bakery	GSW000574	450	Island Lane	Stormwater	Minor	1997
Amity Plaza	GSW000781	Rt. 63	Amity Road	Stormwater	Minor	1997
New Haven Terminal, Inc.	GSW000762	100	Waterfront Street	Stormwater	Minor	1997
Ritz Camera	GPH000112	900	Chapel Street	Photo	Minor	
National Railroad Passenger Corp.	GV8000311	158	Middletown Ave.	Vehicle	Minor	
The York Hill Trap Rock Quarry	GSW000895	340	Chapel Street	Stormwater	Minor	1997
Conn DOT Railroad Diesel Shops	GSW001042		Union Ave.	Stormwater	Minor	1997
Mercede, Frank for Conn DOT Rail Ca	GGR000137		Union Ave.	Groundwater	Minor	2004
Lily Transportation Corp.	GV8000358	46	Goodwin Street	Vehicle	Minor	2003
Johnsonville Foods	GSW001116	26	Kendall St.	Stormwater	Minor	1997
DPL Refuse Services	GSW001121	19	Wheeler St.	Stormwater	Minor	1997
Baier Construction/NH Union Stn.	GGR000138	50	Union Ave.	Groundwater	Minor	2004
Stop-n Car Wash	GVW000219	1610	Whalley Ave.	Vehicle	Minor	2004
US Repeating Arms Co.	GSW001227	334	Winchester Ave.	Stormwater	Minor	1997
US Repeating Arms Co.	SP0002223	334	Winchester Ave.	Pretreatment	Signif	1999
Merk Oil of Conn.	GGR000144	1331	State St.	Groundwater	Minor	2004
Auto Spa of Woodbridge	GV8000438	123	Fowler St.	Vehicle	Minor	2004
Advanced Clean-up Tech.	GGR000147	42	Canner St.	Groundwater	Minor	2004
Conn DOT	GSW001289		Rt. 1	Stormwater	Minor	1997
US Postal Service	GVW000268	50	Blawiey St.	Vehicle	Minor	

Page 2

CTDEP SHEET 2

CT DEP LIST - 3

6/11/98

Permittee	Permit #	St. Connected to Street	Type	Size	Expires
White Oak Corp./Conn DOT	GGR000153	Rt. 1	Groundwater	Minor	2004
Exxon Car Wash KJC	GV8000500	284 Whalley Ave.	Vehicle	Minor	
HO Penn Machinery Co., Inc.	GSW000694	226 Richard St.	Stormwater	Minor	1997
Metropolitan Metal Finishing	SP0000062	400 Goodrich St., Hamden	Pre-treatment	Major	1998
Conn DOT (Pond Lily Ave.)	GGR199801925	140 Pond Lily Ave.	Groundwater	Minor	
Conn DOT (Pond Lily Ave.)	GV8000621	140 Pond Lily Ave.	Vehicle	Minor	
Haffman Press, Inc.	GPH000338	Printer's Lane	Printing		
SNET	GV8000681	10 Wall St.	Vehicle	Minor	2005
SNET	GCW000078	387 Orange St.	Cooling	Minor	2002
ACL Development Corp.	GSW001585	1475 Whalley Ave.	Stormwater	Minor	1997
Chevron USA - Gulf Station	GHT010006	500 Waterfront St.		Minor	1997
Gateway Waterfront	GSW001483	400 Waterfront St.	Stormwater	Minor	1997
Gateway Waterfront	GSW001484	Grand Ave.	Stormwater	Minor	1997
Gulf Oil Ltd.	GSW001417	500 Waterfront St.	Stormwater	Minor	1997
K - Mart Corp.	GSC000004	325 Foxon Blvd.	?	Minor	2000
Long Wharf Mobil Car Wash	GVW000323	200 Sargent Dr.	Vehicle	Minor	2006
New Haven Register	GPP000008	40 Sargent Dr.	Printing	Minor	2005
Northeast Petroleum	GSW001460	481 East Shore Pkwy	Stormwater	Minor	1997
SNET	GCW010061	350 George St.	Cooling	Minor	1997
SNET	GCW000073	310 Orange St.	Cooling	Minor	2002
SNET	GCW000074	308 George St.	Cooling	Minor	2002
SNET	GV8000615	4 Hamilton St.	Vehicle	Minor	
SNET	GCW000073	227 Church St.	Cooling	Minor	
United Illuminating	GSW001588	500 Waterfront St.	Stormwater	Minor	1997
US Postal Service	GV8000445	50 Brewery St.	Vehicle	Minor	2004
US Postal Service	GSW001416	50 Brewery St.	Stormwater	Minor	1997
Wyatt Energy, Inc.	GSW001439	85 East St.	Stormwater	Minor	1997
Wyatt Energy, Inc.	GHT010009	280 Waterfront St.	?	Minor	1997
Wyatt Energy, Inc.	GSW001440	280 Waterfront St.	Stormwater	Minor	1997
Madwaste Management Inc. of New E		48 River St.	GPP	Minor	
Yale University School of Medicine	GPH	333 Cedar Street	Photo	Minor	
Yale University Science/Central Camp	GPH	20 Ashmun Street	Photo	Minor	
Yale University CT Mental Health Ctr.	GPH	34 Park Street	Photo	Minor	
Yale University Athletic Complex	GPH	252 Derby Avenue	Photo	Minor	

Appendix E Copies of Recent Bypass Reports

WATER POLLUTION CONTROL AUTHORITY
CITY OF NEW HAVEN

345 EAST SHORE PARKWAY

NEW HAVEN

CONNECTICUT 06512

Mr. Fred Wiwie, Sanitary Engineer III
Connecticut DEP, Water Management Bureau
79 Elm Street
Hartford CT 06106

May 4, 1998



Subject: New Haven CSO Bypass Update

Dear Mr. Wiwie:

The New Haven WPCA has completed modifications to the three CSO locations which were the subject of dry-weather bypass reports in February and early March 1998. As you recall, we notified your department by telephone and by fax of our investigation into the cause of these incidents and of our progress in correcting them. In each case, the WPCA decided to raise the base elevation of the weir to reduce the risk and limit the effect of further CSO bypasses.

1. #OE2-013 at Everitt/East Rock - This location was influenced by pumping cycles at the nearby Hamden pump station. Very short duration bypasses occurred at the initiation of the pumping cycle during early morning high sewer flows. After we reviewed the recently completed City wide flow study, the weir was raised by 8" on March 25, 1998. Further observation confirmed that no dry weather bypass events have since taken place.
2. #OB5-004 at Ella T. Grasso Blvd./Legion Ave. - As previously reported by Superintendent Fura on March 4, 1998, the WPCA raised the base elevation of the 2 lower weir ports to the elevation of the 3rd on February 27, 1998. The effective increase was 8". Further observation confirmed that no dry weather bypass events have since taken place.
3. #009 at James/Grand - The WPCA inspected and serviced the James Street line repeatedly after the bypass was discovered on March 2, 1998. Although the volume of the bypass slackened it would not stop and the WPCA decided to raise this weir also. On April 7, 1998 a diver entered the sewer line and increased the elevation by 8". Further observation confirmed that no dry weather bypass events have since taken place.

Should you or any other interested party wish further information on this report please call me at (203)-466-5265.

Sincerely,


William A. Root
Pollution Abatement Technician

cc: R. Smedberg, T. Fura & W. Idarola - New Haven WPCA



WATER POLLUTION CONTROL AUTHORITY
345 EAST SHORE PARKWAY, NEW HAVEN, CT. 06512
FAX (203) 466-5286

FAX TRANSMITTAL SHEET

DATE: MAY 6 '98TO: FRED WILK, DEP Water Mgmt

COMPANY: _____

FAX #: 860-424-4067# OF PAGES INCLUDING COVER SHEET: 5 HARD COPY MAILED: YES NOFROM: William Root

If you do not receive all pages sent, please contact sender.

RE: CSO BYPASS

MESSAGE:

Fred - here are the (2)
CSO bypass reports from
this week. one was just a trickle
(East Rock) and is resolved.

James it is an ongoing problem
which we are working on. T.V. inspections
+ excavation of the weir are planned.
More to follow on this one.

Bill

BY-PASS REPORT

CITY OR TOWN: New Haven CT
DATE OF BY-PASS: MAR 2 1998
DATE OF REPORT: MAR 6 1998
NAME OF RECEIVING WATERS: MILL River
ESTIMATED QUANTITY OF BY-PASS: 0 - 10 gpm (See duration - below)*
TYPE OF BY-PASS: Combined sewer overflow
LOCATION OF BYPASS: EAST ROCK Rd + EVERIT St (# OE2-013)

REASON FOR BY-PASS: Apparent partial blockage in SANITARY
Line on Everit St.

DURATION OF BY-PASS: Bypass occurred only intermittently
during morning high flows. Condition ended with
JCT-rodding of SANITARY Line on 3/5/98.

STEPS TAKEN TO MINIMIZE THE EFFECT ON RECEIVING WATERS: Chlorine
dosed overflow pipe w/ peak flow morning
hours.

STEPS BEING TAKEN TO PREVENT RECURRENCE OF THE BY-PASS: increased
maintenance + surveillance at this location.

NEW HAVEN CT

BY-PASS REPORT (cont'd.)

Page 2

OTHER AGENCIES NOTIFIED: Fred W. W. C. DEP 3/2/98
Don Ball Aquaculture 3/2/98
Paul Kowalski New Haven Health Dept 3/2/98

REPORT SUBMITTED BY: William A. Root
Pollution Abatement Technician
203- 466- 5265

Submit Completed Report to:

State of Connecticut
Department of Environmental Protection
Bureau of Water Management - Attention: Simon Mobarak
79 Elm Street
Hartford, CT 06106-5127

BY-PASS REPORT

CITY OR TOWN: New Haven CTDATE OF BY-PASS: MAR 2 1998DATE OF REPORT: MAR 6 1998NAME OF RECEIVING WATERS: MILL RIVERESTIMATED QUANTITY OF BY-PASS: 5-25 gpm (See durations below) ②TYPE OF BY-PASS: Combined Sewer OverflowLOCATION OF BYPASS: James St + Grand Ave (#009)REASON FOR BY-PASS: Apparent partial blockage of UNKNOWN origin raising level of sanitary flow above weir levelDURATION OF BY-PASS: First noted during CSO monthly inspection on March 2. Still bypassing Friday Afternoon 3/6/98.
③ 100 hours (to date) x 5-25 gpm = 30000-150,000 gal.STEPS TAKEN TO MINIMIZE THE EFFECT ON RECEIVING WATERS: Chlorine drip system installed and monitored twice daily. Continuing effort to identify / relieve cause of blockage including JET-rodding and T.V. inspection of weir + sanitary line.STEPS BEING TAKEN TO PREVENT RECURRENCE OF THE BY-PASS: Undetermined at present.

JAMES + GRAND AVE
NEW HAVEN, CT

Y-PASS REPORT (cont'd.)

Page 2

OTHER AGENCIES NOTIFIED: Fred W. W. DEP 3/2/98
Dou Bell Agriculture 3/2/98
Paul Kowalski New Haven Health Dept 3/2/98

REPORT SUBMITTED BY: William A Root
Pollution Abatement Technician
203- 466- 5265

Submit Completed Report to:

State of Connecticut
Department of Environmental Protection
Bureau of Water Management - Attention: Simon Moharak
79 Elm Street
Hartford, CT 06106-5127



WATER POLLUTION CONTROL AUTHORITY
CITY OF NEW HAVEN

345 EAST SHORE PARKWAY

NEW HAVEN

CONNECTICUT 06512

February 25, 1998



Mr. Fred Wiwie
Sanitary Engineer III
State of Connecticut
Department of Environmental Protection
Water Management Bureau
Municipal Facilities Section
79 Elm Street
Hartford, CT 06106

RECEIVED

MAR 02 1998

CITY ENGINEER'S OFFICE

Dear Mr. Wiwie:

Enclosed is a By-Pass Report submitted on behalf of the W.P.C.A. of the City of New Haven. The report is for the Dry Weather Over-flow at Combined Sewer Over-flow location #004, Legion Avenue and the Ella T. Grasso Boulevard.

In summary, the W.P.C.A. was first notified of this over-flow at approximately 8:30 A.M. on Monday, February 23, 1998. A call was received by Mr. William Root, W.P.C.A. Wastewater Abatement Technician, placed by Mr. Peter Davis "the River Keeper." Mr. Root went to the location, and was then met by Jackie Burnell of the D.E.P. approximately 9:00 A.M. on February 23, 1998.

Additional details are contained in the attached report. If you need any further information, please call me at (203) 466-5262.

Yours truly,

Thaddeus F. Fura, Jr.,
Wastewater Systems Superintendent

CC: Raymond Smedberg, W.P.C.A. General Manager
William Idarola, Collections System Superintendent
Charles Biggs, Wastewater Maintenance Superintendent
✓ Richard Miller, City Engineer
Paul Kowalski, City Health Department
Don Bell, State Dept. of Agriculture/Aquaculture
Department of Health Services/Water Supply Section
Recreational Health & Safety Program/State Department of Public Health
File
Enclosure

BY-PASS REPORT

CITY OR TOWN: New Haven, Connecticut
DATE OF BY-PASS: Reported to the Water Pollution Control Authority at 9:00 A.M. on February 23, 1998.
DATE OF REPORT: February 24, 1998
NAME OF RECEIVING WATERS: West River, New Haven Harbor and Long Island Sound
* ESTIMATED QUANTITY OF BY-PASS: Assuming a starting time of Sunday, 2/22/98, A.M. 48 hours; estimated quantity is less than 100,000 gallons.***
TYPE OF BY-PASS: Combined Sewer over-flow No. 004.
LOCATION OF BYPASS: Boulevard at Legion Avenue, New Haven, Connecticut.

REASON FOR BY-PASS: Preliminary investigation determined that the cause may be a downstream obstruction caused by heavy roots obstructing the Boulevard Trunk Line. This resulted in surcharging of line and over-flow at the weir. The over-flow structure may be damaged, and this will also be inspected, and repaired if necessary. Water levels subsided on 2/25/98, allowing inspection of the structure. Inspection revealed no damage to the weir.

DURATION OF BY-PASS: Based on the information the W.P.C.A. is aware of, a minimum of 48 hours. Due to rain, this combined sewer over-flow became a wet-weather over-flow during the evening of February 23, 1998. **

STEPS TAKEN TO MINIMIZE THE EFFECT ON RECEIVING WATERS: W.P.C.A. Collection System Personnel removed some of the root mass, dropping in sewer on 2/23/98. This diminished level the over-flow and lowered the sewer line water level. The Collection Crew will return to the site once the rainstorm ceases to inspect the over-flow structure; and continue maintenance. Storm conditions, which began to occur on 2/23/98 curtailed further work at this time. Major maintenance will be done on a one mile section of the Boulevard trunk line, once the water levels subside. (Flushing, Root Cutting, etc.)

STEPS BEING TAKEN TO PREVENT RECURRENCE OF THE BY-PASS: See above steps taken to minimize the effect on receiving water. W.P.C.A. will be meeting with our consultant on 2/24/98 to investigate modifications that could be done on the over-flow structure. This section of sewer will be placed on a priority maintenance schedule to eliminate similar incidents from occurring. Cleaning will occur approximately five times per year.

BY-PASS REPORT (cont'd.)
Page 2

OTHER AGENCIES NOTIFIED: Jackie Burnell of D.E.P. was on site Monday, February 23rd, and notified D.E.P. W.P.C.A. was notified by phone at 9:00 A.M. on 2/24/98. Don Bell, State Department of Acquaculture notified via phone 9:05 A.M. on 2/24/98. City Environmental Health Director Paul Kowalski, was notified at 9:10 A.M. on 2/24/98, via voice mail message by Thad Fura.

REPORT SUBMITTED BY: Thaddeus F. Fura, Jr.,
Wastewater Sytems Superintendent

Thaddeus F. Fura, Jr.

Submit Completed Report to:

State of Connecticut
Department of Environmental Protection
Bureau of Water Management - Attention: Simon Mobarak
79 Elm Street
Hartford, CT 06106-5127

*Estimated quantity assumes the event started on 2/22/98 in the A.M., and continued for 48 hours; at an rate of approximately 2 G.P.M.
[initial]

**Initial cutting of roots in Boulevard Line resulted in an immediate decrease in over-flow rate. Due to surcharging of line, over-flow did not completely stop. Due to increasing flow due to rain on 2/23/98, it could not be determined if root cutting completely resolved the problem.

***Due to the storm event that started during the afternoon of 2/23/98, and the varying flow rate; the estimate is based on an increased rate of over-flow observed on 2/24/98. The initial rate being only several gallons per minute, at the time of the 8:30 A.M. - 9:00 A.M. inspection by the W.P.C.A. staff.



WATER POLLUTION CONTROL AUTHORITY
CITY OF NEW HAVEN

345 EAST SHORE PARKWAY

NEW HAVEN

CONNECTICUT 06512



RECEIVED

NOV 06 1997

November 3, 1997

Fred Wiwie
State of Connecticut
Department of Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

Postnet Fax Note 7571		Date 11/10/97	# of pages 3
To Peter Van Zeeck	From Larry Smith		
Co./Dept.	Co.		
Phone #	Phone #		
Fax #	Fax #		

Dear Mr. Wiwie:

Attached is a bypass report for the Water Pollution Control Authority's James Street Siphon.

On October 29, 1997 WPCA staff received notice of an overflow from the James Street Siphon at 12:00 PM. WPCA staff responded by starting an alternate mechanically clean bar screen which ended the event by approximately 1:00 PM on 10/27/97.

Since a portion of the flow was passing through the siphon, it is somewhat difficult to estimate the total volume bypassed per day. Our estimate of 1 MGD per day is a portion of the average daily flow that bypassed the siphon. We have also presumed that the event could have commenced shortly after the siphon was last checked by WPCA staff.

If you should have any additional questions, please contact me at 203-466-5269.

Yours sincerely,

Thaddeus F. Fura, Jr.
Wastewater Systems Superintendent

el

cc: Charles Biggs, W.W. Maint. Supt.
Raymond C. Smedberg, WPCA General Manager
Paul Kowalski, City Health Dept.
Richard Miller, City Engineer ✓
Don Bell, State Dept. of Agriculture/Aquaculture
Dept. of Health Services/Water Supply Section
Recreational Health & Safety Program/State Dept. of Public Health
Enc.

BY-PASS REPORT

CITY OR TOWN: New Haven

DATE OF BY-PASS: 10/29/97

DATE OF REPORT: 11/3/97

NAME OF RECEIVING WATERS: New Haven Harbor

ESTIMATED QUANTITY OF BY-PASS: 1 mgd per day, max. total of 5 days*

TYPE OF BY-PASS: Siphon Bypass, James St., untreated combined sewage

LOCATION OF BYPASS: _____

REASON FOR BY-PASS: James Street Siphon building mechanical bar screen failed, alternate back-up unit failed to startup resulting in overflow at CSO #015.

High differential alarm for high level also did not activate and warn staff at WPCF.

DURATION OF BY-PASS: The potential existed for the bypass to have commenced on 10/24/97 and ceased on 10/29/97. October 24th, personnel checked the siphon and found siphon operating normally.

STEPS TAKEN TO MINIMIZE THE EFFECT ON RECEIVING WATERS: Alternate mechanical bar screen was turned on by WPCA personnel resulting in an immediate end to the overflow condition.

STEPS BEING TAKEN TO PREVENT RECURRENCE OF THE BY-PASS: Alarm and control systems are being checked out to ensure they function properly. #1 mechanical bar screen will be repaired as soon as possible.

*See Cover Letter

BY-PASS REPORT (cont'd.)

Page 2

OTHER AGENCIES NOTIFIED: Spoke with Fred Wiwla, DEP at 2:30 PM. Spoke with
Laurie of State Dept. of Aquaculture: 2:35 PM. Spoke with Paul Kowalski 2:40 PM.
City of New Haven Health Dept. All agencies notified on 10/29/97 by Thad Fura.

REPORT SUBMITTED BY: Thaddeus F. Fura, Jr., Wastewater Systems Superintendent

Submit Completed Report to:

State of Connecticut
Department of Environmental Protection
Bureau of Water Management - Attention: Fred Wiwla
79 Elm Street
Hartford, CT 06106-5127

Appendix F Various CSO and Stormwater Quality Data and Sources

Appendix F
Statistical Summary of Stormwater Quality Data

Study Source	Study Period	Locations Sampled	Sampling Events	BOD (mg/L)				TSS (mg/L)				Fecal Coliform (MPN/100mL)				Total Kjeldahl Nitrogen (mg/L)			
				No. Data	Low	Arithmetic Mean	High	No. Data	Low	Arithmetic Mean	High	No. Data	Low	Geometric Mean	High	No. Data	Low	Arithmetic Mean	High
Providence Area B	5/21/86 - 10/3/86	-	5	19	< 2	27.0	127	19	11.3	37.7	119.0	19	< 1,000	6.63E+04	2.40E+07	Not Analyzed			
Area C	10/28/87	-	1	6	8	38.7	120	6	4.6	24.5	46.0	6	< 2	5.55E+03	2.40E+05	Not Analyzed			
Area D	5/10/89 - 10/2/89	-	3	8	34	119.0	252	12	7.0	32.0	57.9	12	4.30E+03	1.66E+05	4.30E+06	Not Analyzed			
Boston	1988	-	-	-	2	23.5	85	-	6.0	57.0	550.0	-	-	4.93E+04	-	Not Available			
NURP (28 project locations)	1983	28	-	-	0.41	9	159	-	2	150	2890	Not Available				-	-	1.28	-
NURP (EMC for urban sites)	1983	-	-	-	-	10-13	-	-	-	141-224	-	Not Available				-	-	1.68-2.12	-
NURP (New England)	1983	8	-	-	2	52.1	252	-	4.6	37.8	550	-	2	7.18E+04	2.40E+07	Not Analyzed			
NURP (New York)	1983	5	-	Not Analyzed				-	25	42-294	380	-	-	1.10E+04 2.40E+04	-	-	0.72	1.24-3.25	4.24
New Haven Industrial Discharges Quinnipiac	10/20/95 - 9/13/96	6	5	Not Analyzed				6	17.0	43.6	146.3	6	20	440	20000	6	0.50	1.21	2.48
Mill	1/24/96 - 10/28/96	7	5	Not Analyzed				7	0.0	21.6	78.0	5	25	304	11300	7	0.14	0.40	0.75
West	9/17/96	1	1	Not Analyzed				1	13.0	13.0	13.0	1	100	100	100	1	0	0	0
Harbor	2/9/96 - 11/26/96	19	7	Not Analyzed				19	3.0	77.6	388.0	18	10	262	14400	19	0.50	1.48	5.20

Sources:

CH2M HILL. Stormwater Management Modeling for Narragansett Bay Commission CSO Facilities. Volume 1: Final Report. Jan 22, 1992

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